I hereby certify that this paper is being deposited with the United States Postal Service as ~~first class~~ EXPRESS ® mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D. C. 20231
on 31 JULY 2001

Jeff Lloyd, Patent Attorney

Patent Application
Docket No. KAS-103XC1
Serial No. (not yet assigned)
SUBMISSION OF SEQUENCE LISTING 37 CFR 1821

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Frederick M. Hahn, Adelheid R. Kuehle
Serial No.	:	(not yet assigned)
Filed	:	July 31, 2001
For	:	Manipulation of Genes of the Mevalonate and Isoprenoid Pathways to Create Novel Traits in Transgenic Organisms

Assistant Commissioner for Patents
Washington D.C. 20231

SUBMISSION OF SEQUENCE LISTING UNDER 37 CFR §1.821

Sir:

Transmitted herewith is a sequence listing under 37 CFR §§1.821 through 1.825 for the above-identified patent application.

The sequence is submitted in computer readable format and on paper. I hereby certify that the paper and computer readable copies contain the same sequence information and that no new material is added by this submission.

Respectfully submitted,

Jeff Lloyd
Patent Attorney
Registration No. 35,589
Phone No.: 407-426-7500
Address: 1000 Legion Place, Suite 1750
Orlando, FL 32801

JL/srp
Attachments: Sequence Listing on paper and in computer readable format; paperwork for filing Utility Patent Application.

SEQUENCE LISTING

<110> Hahn, Frederick

Kuehnle, Adelheid

<120> Manipulation of genes of the mevalonate and isoprenoid pathways to create novel traits in transgenic organisms

<130> KAS-103XC1

<150> 60/221,703

<151> 2000-07-31

<160> 76

<170> PatentIn version 3.0

<210> 1

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing Saccharomyces cerevisiae DNA

<400> 1
ggactagtct gcaggaggag ttttaatgtc attaccgttc ttaacttctg caccggg 57

<210> 2

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. cerevisiae DNA

<400> 2
ttctcgagct taagagtagc aatatttacc ggagcagtta cactagcagt atatacagtc 60

attaaaactc ctcctgtgaa gtccatggta aattcg 96

<210> 3

<211> 56

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. cerevisiae DNA

<400> 3
tagcggccgc aggaggagtt catatgtcag agttgagagc cttcagtgcc ccaggg 56

<210> 4

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. cerevisiae DNA

<400> 4
tttctgcagt ttatcaagat aagtttccgg atcttt 36

<210> 5

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. cerevisiae DNA

<400> 5
ggaattcatg accgtttaca cagcatccgt taccgcaccc g 41

<210> 6

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. cerevisiae DNA

<400> 6
ggctcgagtt aaaactcctc ttcctttggt agaccagtct ttgcg 45

<210> 7

<211> 68

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing Arabidopsis thaliana DNA

<400> 7
gctctagatg cgcaggaggc acatatggcg aagaacgttg ggattttggc tatggatatc 60

tatttccc 68

<210> 8

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing A. thaliana DNA

<400> 8
cgctcgagtc gacggatcct cagtgtccat tggctacaga tccatcttca cctttcttgc 60

c 61

<210> 9

<211> 72

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing A. thaliana DNA

<400> 9
ccgctcgagc acgtggaggc acatatgcaa tgctgtgaga tgcctgttgg atacattcag 60

attcctgttg gg 72

<210> 10

<211> 71

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing A. thaliana DNA

<400> 10
ggggtacctg cggccggatc ccgggtcatg ttgttgttgt tgtcgttgtc gttgctccag 60

agatgtctcg g 71

<210> 11

<211> 74

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. cerevisiae DNA

<400> 11
acaacaccgc ggcggccgcg tcgacgccgg cggaggcaca tatgtctcag aacgtttaca 60

ttgtatcgac tgcc 74

<210> 12

<211> 53

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. cerevisiae DNA

<400> 12
gctctagagg atcctcatat cttttcaatg acaatagagg aagcaccacc acc 53

<210> 13

<211> 65

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 13
gctctagata cgtaggaggc acatatgagt gagcttatac ccgcctgggt tggtgacaga 60

ctggc 65

<210> 14

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing A. thaliana and S. cerevisiae DNA

<400> 14
cgctcgagcc cgggggatcc tcagccgcgc aggatcgatc cgaaaatccg gtcaagatgg 60

c 61

<210> 15

<211> 72

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 15
gctctagata cgtaggaggc acatatgagt tcccaacaag agaaaaagga ttatgatgaa 60

gaacaattaa gg 72

<210> 16

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 16
cgctcgagcc cgggggatcc ttagcaacga tgaattaagg tatcttggaa ttttgacgc 59

<210> 17

<211> 6215

<212> DNA

<213> Artificial Sequence

<220>

<221> misc_feature

<222> ()..()

<223> Vector pBSNT27 containing Nicotiana tabacum DNA

<400> 17
gcacttttcg gggaaatgtg cgcggaaccc ctatttgttt atttttctaa atacattcaa 60

atatgtatcc gctcatgaga caataaccct gataaatgct tcaataatat tgaaaaagga 120

agagtatgag tattcaacat ttccgtgtcg cccttattcc ctttttgcg gcattttgcc 180

ttcctgtttt tgctcaccca gaaacgctgg tgaaagtaaa agatgctgaa gatcagttgg 240

gtgcacgagt gggttacatc gaactggatc tcaacagcgg taagatcctt gagagttttc 300

gccccgaaga acgttttcca atgatgagca cttttaaagt tctgctatgt ggcgcggtat 360

tatcccgtat tgacgccggg caagagcaac tcggtcgccg catacactat tctcagaatg 420

acttggttga gtactcacca gtcacagaaa agcatcttac ggatggcatg acagtaagag 480

aattatgcag tgctgccata accatgagtg ataacactgc ggccaactta cttctgacaa 540

cgatcggagg accgaaggag ctaaccgctt ttttgcacaa catgggggat catgtaactc 600

gccttgatcg ttgggaaccg gagctgaatg aagccatacc aaacgacgag cgtgacacca 660

cgatgcctgt agcaatggca acaacgttgc gcaaactatt aactggcgaa ctacttactc 720

tagcttcccg gcaacaatta atagactgga tggaggcgga taaagttgca ggaccacttc 780

tgcgctcggc ccttccggct ggctggttta ttgctgataa atctggagcc ggtgagcgtg 840

ggtctcgcgg tatcattgca gcactggggc cagatggtaa gccctcccgt atcgtagtta 900

tctacacgac ggggagtcag gcaactatgg atgaacgaaa tagacagatc gctgagatag 960

gtgcctcact gattaagcat tggtaactgt cagaccaagt ttactcatat atactttaga 1020

ttgatttaaa acttcatttt taatttaaaa ggatctaggt gaagatcctt tttgataatc 1080

tcatgaccaa aatcccttaa cgtgagtttt cgttccactg agcgtcagac cccgtagaaa 1140

agatcaaagg atcttcttga gatccttttt ttctgcgcgt aatctgctgc ttgcaaacaa 1200

aaaaaccacc gctaccagcg gtggtttgtt tgccggatca agagctacca actcttttc 1260

cgaaggtaac tggcttcagc agagcgcaga taccaaatac tgtccttcta gtgtagccgt 1320

agttaggcca ccacttcaag aactctgtag caccgcctac atacctcgct ctgctaatcc 1380

tgttaccagt ggctgctgcc agtggcgata agtcgtgtct taccgggttg gactcaagac 1440

gatagttacc ggataaggcg cagcggtcgg gctgaacggg gggttcgtgc acacagccca 1500

gcttggagcg aacgacctac accgaactga gatacctaca gcgtgagcta tgagaaagcg 1560

ccacgcttcc cgaagggaga aaggcggaca ggtatccggt aagcggcagg gtcggaacag 1620

gagagcgcac gagggagctt ccagggggaa acgcctggta tctttatagt cctgtcgggt 1680

ttcgccacct ctgacttgag cgtcgatttt tgtgatgctc gtcaggggggg cggagcctat 1740

ggaaaaacgc cagcaacgcg gccttttttac ggttcctggc cttttgctgg ccttttgctc 1800

acatgttctt tcctgcgtta tcccctgatt ctgtggataa ccgtattacc gcctttgagt 1860

gagctgatac cgctcgccgc agccgaacga ccgagcgcag cgagtcagtg agcgaggaag 1920

cggaagagcg cccaatacgc aaaccgcctc tccccgcgcg ttggccgatt cattaatgca 1980

gctggcacga caggtttccc gactggaaag cgggcagtga gcgcaacgca attaatgtga 2040

gttagctcac tcattaggca ccccaggctt tacactttat gcttccggct cgtatgttgt 2100

gtggaattgt gagcggataa caatttcaca caggaaacag ctatgaccat gattacgcca 2160

agctcgaaat taaccctcac taaagggaac aaaagctgga gctccaccgc ggtggcggcc 2220

gctctagaac tagtggatct tcttggctgt tattcaaaag gtccaacaat gtatatatat 2280

tggacatttt gaggcaatta tagatcctgg aaggcaattc tgattggtca ataaaaatcg 2340

atttcaatgc tatttttttt ttgtttttta tgagtttagc caatttatca tgaaaggtaa 2400

aaggggataa aggaaccgtg tgttgattgt cctgtaaata taagttgtct tcctccatat 2460

gtaaaaaggg aataaataaa tcaattaaat ttcgggatgc ttcatgaagt gcttctttcg 2520

gagttaaact tccgtttgtc catatttcga gaaaaagtat ctcttgtttt tcattcccat 2580

tcccataaga atgaatacta tgattcgcgt ttcgaacagg catgaataca gcatctatag 2640

gataacttcc atcttgaaag ttatgtggcg tttttataag atatccacga tttctctcta 2700

tttgtaatcc aatacaaaaa tcaattggtt ccgttaaact ggctatatgt tgtgtattat 2760

caacgatttc tacataaggc ggcaagatga tatcttgggc agttacagat ccaggaccct 2820

tgacacaaat agatgcgtca gaagttccat atagattact tcttaatata atttctttca 2880

aattcattaa aatttcatgt accgattctt gaatgcccgt tatggtagaa tattcatgtg 2940

ggactttctc agattttaca cgtgtgatac atgttccttc tatttctcca agtaaagctc 3000

ttcgcatcgc aatgcctatt gtgtcggctt ggcctttcat aagtggagac agaataaagc 3060

gtccataata aaggcgttta ctgtctgttc ttgattcaac acacttccac tgtagtgtcc 3120

gagtagatac tgttactttc tctcgaacca tagtactatt atttgattag atcatcgaat 3180

cttttatttc tcttgagatt tcttcaatgt tcagttctac acacgtcttt ttttcggagg 3240

tctacagcca ttatgtggca taggagttac atcccgtacg aaagttaata gtataccact 3300

tcgacgaata gctcgtaatg ctgcatctct tccgagaccg ggacctttta tcatgacttc 3360

tgctcgttgc ataccttgat ccactactgt acggatagcg tttgctgctg cggtttgagc 3420

agcaaacggt gttcctcttc tcgtaccttt gaatccagaa gtaccggcgg aggaccaaga 3480

aactactcga ccccgtacat ctgtaacagt gacaatggta ttattgaaac ttgcttgaac 3540

atgaataact ccctttggta ttctacgtgc acccttacgt gaaccaatac gtccattcct 3600

acgcgaacta attttcggta tagcttttgc catattttat catctcgtaa atatgagtca 3660

gagatatatg gatatatcca tttcatgtca aaacagattc tttatttgta catcggctct 3720

tctggcaagt ctgattatcc ctgtctttgt ttatgtctcg ggttggaaca aattactata 3780

attcgtcccc gcctacggat tagtcgacat ttttcacaaa ttttacgaac ggaagctctt 3840

attttcatat ttctcattcc ttaccttaat tctgaatcta tttcttggaa gaaaataagt 3900

ttcttgaaat ttttcatctc gaattgtatt cccacgaaag gaatggtgaa gttgaaaaac 3960

gaatccttca aatctttgtt gtggagtcga taaattatac gccctttggt tgaatcataa 4020

ggacttactt caattttgac tctatctcct ggcagtatcc gtataaaact atgccggatc 4080

tttcctgaaa cataatttat aatcagatct aaacaaaccc ggaacagacc gttgggaagc 4140

gattcagtaa ttaaagcttc atgactcctt tttggttctt aaagtccctt tgaggtatca 4200

actaataaga aagatattag acaacccccc ttttttcttt ttcacaaata ggaagtttcg 4260

aatccaattt ggatattaaa aggattacca gatataacac aaaatctctc cacctattcc 4320

ttctagtcga gcctctcggt ctgtcattat acctcgagaa gtagaaagaa ttacaatccc 4380

cattccacct aaaattcgcg gaattcgttg ataattagaa tagattcgta gaccaggtcg 4440

actgattcgt tttaaattta aaatatttct atagggtctt ttcctattcc ttctatgtcg 4500

cagggttaaa accaaaaaat atttgttttt ttctcgatgt tttctcacgt tttcgataaa 4560

accttctcgt aaaagtattt gaacaatatt ttcggtaata ttagtagatg ctattcgaac 4620

caccctttt cgatccatat cagcatttcg tatagaagtt attatctcag caatagtgtc 4680

cctacccatg atgaactaaa attattgggg cctccaaatt tgatataatc aacgtgtttt 4740

ttacttattt ttttttgaa tatgatatga attattaaag atatatgcgt gagacacaat 4800

ctactaatta atctatttct ttcaaatacc ccactagaaa cagatcacaa tttcatttta 4860

taatacctcg ggagctaatg aaactatttt agtaaaattt aattctctca attcccgggc 4920

gattgcacca aaaattcgag ttccttttga tttccttcct tcttgatcaa taacaactgc 4980

agcattgtca tcatatcgta ttatcatccc gttgtcacgt ttgagttctt tacaggtccg 5040

cacaattaca gctctgacta cttctgatct ttctaggggc atatttggta cggcttcttt 5100

gatcacagca acaataacgt caccaatatg agcatatcga cgattgctag ctcctatgat 5160

tcgaatacac atcaattctc gagccccgct gttatccgct acatttaaat gggtctgagg 5220

ttgaatcatt tttttaatcc gttctttgaa tgcaaagggc gaagaaaaaa aagaaatatt 5280

tttgtccaaa aaaaaagaaa catgcggttt cgtttcatat ctaagagccc tttccgcatt 5340

tttttctatt acattacgaa ataatgaatt gagttcgtat aggcatttta gatgctgcta 5400

gtgaaatagc ccttctggct atatttttctg ttactccacc catttcataa agtattcgac 5460

ccggtttaac aacagctacc caatattcag gggatccccc gggctgcagg aattcgatat 5520

caagcttatc gataccgtcg acctcgaggg ggggcccggt acccaattcg ccctatagtg 5580

agtcgtatta caattcactg gccgtcgttt tacaacgtcg tgactgggaa aaccctggcg 5640

ttacccaact taatcgcctt gcagcacatc ccccttcgc cagctggcgt aatagcgaag 5700

aggcccgcac cgatcgccct tcccaacagt tgcgcagcct gaatggcgaa tgggacgcgc 5760

cctgtagcgg cgcattaagc gcggcgggtg tggtggttac gcgcagcgtg accgctacac 5820

ttgccagcgc cctagcgccc gctcctttcg ctttcttccc ttcctttctc gccacgttcg 5880

ccggctttcc ccgtcaagct ctaaatcggg ggctcccttt agggttccga tttagtgctt 5940

tacggcacct cgaccccaaa aaacttgatt agggtgatgg ttcacgtagt gggccatcgc 6000

cctgatagac ggtttttcgc cctttgacgt tggagtccac gttctttaat agtggactct 6060

tgttccaaac tggaacaaca ctcaacccta tctcggtcta ttcttttgat ttataaggga 6120

ttttgccgat ttcggcctat tggttaaaaa atgagctgat ttaacaaaaa tttaacgcga 6180

attttaacaa aatattaacg cttacaattt aggtg 6215

<210> 18

<211> 1332

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and S. cerevisiae DNA

<400> 18

atgtcattac cgttcttaac ttctgcaccg ggaaaggtta ttatttttgg tgaacactct 60

gctgtgtaca acaagcctgc cgtcgctgct agtgtgtctg cgttgagaac ctacctgcta 120

ataagcgagt catctgcacc agatactatt gaattggact tcccggacat tagctttaat 180

cataagtggt ccatcaatga tttcaatgcc atcaccgagg atcaagtaaa ctcccaaaaa 240

ttggccaagg ctcaacaagc caccgatggc ttgtctcagg aactcgttag tcttttggat 300

ccgttgttag ctcaactatc cgaatccttc cactaccatg cagcgttttg tttcctgtat 360

atgtttgttt gcctatgccc ccatgccaag aatattaagt tttctttaaa gtctacttta 420

cccatcggtg ctgggttggg ctcaagcgcc tctatttctg tatcactggc cttagctatg 480

gcctacttgg gggggttaat aggatctaat gacttggaaa agctgtcaga aaacgataag 540

catatagtga atcaatgggc cttcataggt gaaaagtgta ttcacggtac cccttcagga 600

atagataacg ctgtggccac ttatggtaat gccctgctat ttgaaaaaga ctcacataat 660

ggaacaataa acacaaacaa ttttaagttc ttagatgatt tcccagccat tccaatgatc 720

ctaacctata ctagaattcc aaggtctaca aaagatcttg ttgctcgcgt tcgtgtgttg 780

gtcaccgaga aatttcctga agttatgaag ccaattctag atgccatggg tgaatgtgcc 840

ctacaaggct tagagatcat gactaagtta agtaaatgta aaggcaccga tgacgaggct 900

gtagaaacta ataatgaact gtatgaacaa ctattggaat tgataagaat aaatcatgga 960

ctgcttgtct caatcggtgt ttctcatcct ggattagaac ttattaaaaa tctgagcgat 1020

gatttgagaa ttggctccac aaaacttacc ggtgctggtg gcggcggttg ctctttgact 1080

ttgttacgaa gagacattac tcaagagcaa attgacagct tcaaaaagaa attgcaagat 1140

gattttagtt acgagacatt tgaaacagac ttgggtggga ctggctgctg tttgttaagc 1200

gcaaaaaatt tgaataaaga tcttaaaatc aaatccctag tattccaatt atttgaaaat 1260

aaaactacca caaagcaaca aattgacgat ctattattgc caggaaacac gaatttacca 1320

tggacttcat aa 1332

<210> 19

<211> 1191

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and A. thaliana DNA

<400> 19

atgaccgttt acacagcatc cgttaccgca cccgtcaaca tcgcaaccct taagtattgg 60

gggaaaaggg acacgaagtt gaatctgccc accaattcgt ccatatcagt gactttatcg 120

caagatgacc tcagaacgtt gacctctgcg gctactgcac ctgagtttga acgcgacact 180

ttgtggttaa atggagaacc acacagcatc gacaatgaaa gaactcaaaa ttgtctgcgc 240

gacctacgcc aattaagaaa ggaaatggaa tcgaaggacg cctcattgcc cacattatct 300

caatggaaac tccacattgt ctccgaaaat aactttccta cagcagctgg tttagcttcc 360

tccgctgctg gctttgctgc attggtctct gcaattgcta agttatacca attaccacag 420

tcaacttcag aaatatctag aatagcaaga aaggggtctg gttcagcttg tagatcgttg 480

tttggcggat acgtggcctg ggaaatggga aaagctgaag atggtcatga ttccatggca 540

gtacaaatcg cagacagctc tgactggcct cagatgaaag cttgtgtcct agttgtcagc 600

gatattaaaa aggatgtgag ttccactcag ggtatgcaat tgaccgtggc aacctccgaa 660

ctatttaaag aaagaattga acatgtcgta ccaaagagat ttgaagtcat gcgtaaagcc 720

attgttgaaa aagatttcgc cacctttgca aaggaaacaa tgatggattc caactctttc 780

catgccacat gtttggactc tttccctcca atattctaca tgaatgacac ttccaagcgt 840

atcatcagtt ggtgccacac cattaatcag ttttacggag aaacaatcgt tgcatacacg 900

tttgatgcag gtccaaatgc tgtgttgtac tacttagctg aaaatgagtc gaaactcttt 960

gcatttatct ataaattgtt tggctctgtt cctggatggg acaagaaatt tactactgag 1020

cagcttgagg ctttcaacca tcaatttgaa tcatctaact ttactgcacg tgaattggat 1080

cttgagttgc aaaaggatgt tgccagagtg attttaactc aagtcggttc aggcccacaa 1140

gaaacaaacg aatctttgat tgacgcaaag actggtctac caaaggaata a 1191

<210> 20

<211> 1197

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing Rhodobacter capsulatus DNA

<400> 20

atgtctcaga acgtttacat tgtatcgact gccagaaccc caattggttc attccagggt 60

tctctatcct ccaagacagc agtggaattg ggtgctgttg ctttaaaagg cgccttggct 120

aaggttccag aattggatgc atccaaggat tttgacgaaa ttatttttgg taacgttctt 180

tctgccaatt tgggccaagc tccggccaga caagttgctt tggctgccgg tttgagtaat 240

catatcgttg caagcacagt taacaaggtc tgtgcatccg ctatgaaggc aatcattttg 300

ggtgctcaat ccatcaaatg tggtaatgct gatgttgtcg tagctggtgg ttgtgaatct 360

atgactaacg caccatacta catgccagca gcccgtgcgg gtgccaaatt tggccaaact 420

gttcttgttg atggtgtcga aagagatggg ttgaacgatg cgtacgatgg tctagccatg 480

ggtgtacacg cagaaaagtg tgcccgtgat tgggatatta ctagagaaca acaagacaat 540

tttgccatcg aatcctacca aaaatctcaa aaatctcaaa aggaaggtaa attcgacaat 600

gaaattgtac ctgttaccat taagggattt agaggtaagc ctgatactca agtcacgaag 660

gacgaggaac ctgctagatt acacgttgaa aaattgagat ctgcaaggac tgttttccaa 720

aaagaaaacg gtactgttac tgccgctaac gcttctccaa tcaacgatgg tgctgcagcc 780

gtcatcttgg tttccgaaaa agttttgaag gaaaagaatt tgaagccttt ggctattatc 840

aaaggttggg gtgaggccgc tcatcaacca gctgatttta catgggctcc atctcttgca 900

gttccaaagg ctttgaaaca tgctggcatc gaagacatca attctgttga ttactttgaa 960

ttcaatgaag ccttttcggt tgtcggtttg gtgaacacta agattttgaa gctagaccca 1020

tctaaggtta atgtatatgg tggtgctgtt gctctaggtc acccattggg ttgttctggt 1080

gctagagtgg ttgttacact gctatccatc ttacagcaag aaggaggtaa gatcggtgtt 1140

gccgccattt gtaatggtgg tggtggtgct tcctctattg tcattgaaaa gatatga 1197

<210> 21

<211> 1386

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing R. capsulatus DNA

<400> 21
atggcgaaga acgttgggat tttggctatg gatatctatt tccctcccac ctgtgttcaa 60

caggaagctt tggaagcaca tgatggagca agtaaaggga aatacactat tggacttggc 120

caagattgtt tagctttttg cactgagctt gaagatgtta tctctatgag tttcaatgcg 180

gtgacatcac tttttgagaa gtataagatt gaccctaacc aaatcgggcg tcttgaagta 240

ggaagtgaga ctgttattga caaaagcaag tccatcaaga ccttcttgat gcagctcttt 300

gagaaatgtg gaaacactga tgtcgaaggt gttgactcga ccaatgcttg ctatggtgga 360

actgcagctt tgttaaactg tgtcaattgg gttgagagta actcttggga tggacgttat 420

ggcctcgtca tttgtactga cagcgcggtt tatgcagaag gacccgcaag gcccactgga 480

ggagctgcag cgattgctat gttgatagga cctgatgctc ctatcgtttt cgaaagcaaa 540

ttgagagcaa gccacatggc tcatgtctat gacttttaca agcccaatct tgctagcgag 600

tacccggttg ttgatggtaa gctttcacag acttgctacc tcatggctct tgactcctgc 660

tataaacatt tatgcaacaa gttcgagaag atcgagggca aagagttctc cataaatgat 720

gctgattaca ttgttttcca ttctccatac aataaacttg tacagaaaag ctttgctcgt 780

ctcttgtaca acgacttctt gagaaacgca agctccattg acgaggctgc caaagaaaag 840

ttcacccctt attcatcttt gacccttgac gagagttacc aaagccgtga tcttgaaaag 900

gtgtcacaac aaatttcgaa accgttttat gatgctaaag tgcaaccaac gactttaata 960

ccaaaggaag tcggtaacat gtacactgct tctctctacg ctgcatttgc ttccctcatc 1020

cacaataaac acaatgattt ggcgggaaag cgggtggtta tgttctctta tggaagtggc 1080

tccaccgcaa caatgttctc attacgcctc aacgacaata agcctccttt cagcatttca 1140

aacattgcat ctgtaatgga tgttggcggt aaattgaaag ctagacatga gtatgcacct 1200

gagaagtttg tggagacaat gaagctaatg gaacataggt atggagcaaa ggactttgtg 1260

acaaccaagg agggtattat agatcttttg gcaccgggaa cttattatct gaaagaggtt 1320

gattccttgt accggagatt ctatggcaag aaaggtgaag atggatctgt agccaatgga 1380

cactga 1386

<210> 22

<211> 1779

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing Schizosaccharomyces pombe DNA

<400> 22

atggatctcc gtcggaggcc tcctaaacca ccggttacca acaacaacaa ctccaacgga 60

tctttccgtt cttatcagcc tcgcacttcc gatgacgatc atcgtcgccg ggctacaaca 120

attgctcctc caccgaaagc atccgacgcg cttcctcttc cgttatatct cacaaacgcc 180

gttttcttca cgctcttctt ctccgtcgcg tattacctcc tccaccggtg gcgtgacaag 240

atccgttaca atacgcctct tcacgtcgtc actatcacag aactcggcgc cattattgct 300

ctcatcgctt cgtttatcta tctcctaggg ttttttggta ttgactttgt tcagtcattt 360

atctcacgtg cctctggtga tgcttgggat ctcgccgata cgatcgatga tgatgaccac 420

cgccttgtca cgtgctctcc accgactccg atcgtttccg ttgctaaatt acctaatccg 480

gaacctattg ttaccgaatc gcttcctgag gaagacgagg agattgtgaa atcggttatc 540

gacggagtta ttccatcgta ctcgcttgaa tctcgtctcg gtgattgcaa aagagcggcg 600

tcgattcgtc gtgaggcgtt gcagagagtc accgggagat cgattgaagg gttaccgttg 660

gatggatttg attatgaatc gattttgggg caatgctgtg agatgcctgt tggatacatt 720

cagattcctg ttgggattgc tggtccattg ttgcttgatg gttatgagta ctctgttcct 780

atggctacaa ccgaaggttg tttggttgct agcactaaca gaggctgcaa ggctatgttt 840

atctctggtg gcgccaccag taccgttctt aaggacggta tgacccgagc acctgttgtt 900

cggttcgctt cggcgagacg agcttcggag cttaagtttt tcttggagaa tccagagaac 960

tttgatactt tggcagtagt cttcaacagg tcgagtagat ttgcaagact gcaaagtgtt 1020

aaatgcacaa tcgcggggaa gaatgcttat gtaaggttct gttgtagtac tggtgatgct 1080

atggggatga atatggtttc taaaggtgtg cagaatgttc ttgagtatct taccgatgat 1140

ttccctgaca tggatgtgat tggaatctct ggtaacttct gttcggacaa gaaacctgct 1200

gctgtgaact ggattgaggg acgtggtaaa tcagttgttt gcgaggctgt aatcagagga 1260

gagatcgtga acaaggtctt gaaaacgagc gtggctgctt tagtcgagct caacatgctc 1320

aagaacctag ctggctctgc tgttgcaggc tctctaggtg gattcaacgc tcatgccagt 1380

aacatagtgt ctgctgtatt catagctact ggccaagatc cagctcaaaa cgtggagagt 1440

tctcaatgca tcaccatgat ggaagctatt aatgacggca aagatatcca tatctcagtc 1500

actatgccat ctatcgaggt ggggacagtg ggaggaggaa cacagcttgc atctcaatca 1560

gcgtgtttaa acctgctcgg agttaaagga gcaagcacag agtcgccggg aatgaacgca 1620

aggaggctag cgacgatcgt agccggagca gttttagctg gagagttatc tttaatgtca 1680

gcaattgcag ctggacagct tgtgagaagt cacatgaaat acaatagatc cagccgagac 1740

atctctggag caacgacaac gacaacaaca acaacatga 1779

<210> 23

<211> 684

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing S. pombe DNA

<400> 23

atgagttccc aacaagagaa aaaggattat gatgaagaac aattaaggtt gatggaagaa 60

gtttgtatcg ttgtagatga aaatgatgtc cctttaagat atggaacgaa aaaggagtgt 120

catttgatgg aaaatataaa taaaggtctt ttgcatagag cattctctat gttcatcttt 180

gatgagcaaa atcgcctttt acttcagcag cgtgcagaag agaaaattac atttccatcc 240

ttatggacga atacatgttg ctcccaccca ttggatgttg ctggtgaacg tggtaatact 300

ttacctgaag ctgttgaagg tgttaagaat gcagctcaac gcaagctgtt ccatgaattg 360

ggtattcaag ccaagtatat tcccaaagac aaatttcagt ttcttacacg aatccattac 420

cttgctccta gtactggtgc ttggggagag catgaaattg actacattct tttcttcaaa 480

ggtaaagttg agctggatat caatcccaat gaagttcaag cctataagta tgttactatg 540

gaagagttaa aagagatgtt ttccgatcct caatatggat tcacaccatg gttcaaactt 600

atttgtgagc attttatgtt taaatggtgg caggatgtag atcatgcgtc aaaattccaa 660

gataccttaa ttcatcgttg ctaa 684

<210> 24

<211> 531

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing Streptomyces sp CL190 DNA

<400> 24
atgagtgagc ttatacccgc ctgggttggt gacagactgg ctccggtgga caagttggag 60

gtgcatttga aagggctccg ccacaaggcg gtgtctgttt tcgtcatgga tggcgaaaac 120

gtgctgatcc agcgccgctc ggaggagaaa tatcactctc ccgggctttg ggcgaacacc 180

tgctgcaccc atccgggctg gaccgaacgc cccgaggaat gcgcggtgcg gcggctgcgc 240

gaggagctgg ggatcaccgg gctttatccc gcccatgccg accggctgga atatcgcgcc 300

gatgtcggcg gcggcatgat cgagcatgag gtggtcgaca tctatctggc ctatgccaaa 360

ccgcatatgc ggatcacccc cgatccgcgc gaagtggccg aggtgcgctg gatcggcctt 420

tacgatctgg cggccgaggc cggtcggcat cccgagcggt tctcgaaatg gctcaacatc 480

tatctgtcga gccatcttga ccggattttc ggatcgatcc tgcgcggctg a 531

<210> 25

<211> 65

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing Streptomyces sp CL190 DNA

<400> 25
ggggtaccgc ggccgcacgc gtctatgcac caacctttgc ggtcttgttg tcgcgttcca 60

gctgg 65

<210> 26

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 26
gagctccacc gcggcggccg cgtcgactac ggccgcagga ggagttcata tgtcagagtt 60

<210> 27

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 27
tctaccaaag gaagaggagt tttaactcga gtaggaggca catatgtctc agaacgttta 60

<210> 28

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing Streptomyces sp CL190 and
R. capsulatus DNA

<400> 28
caagaccgca aaggttggtg catagacgcg gtaaggaggc acatatgagt gagcttatac 60

<210> 29

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing R. capsulatus DNA

<400> 29
cctgcgcggc tgagcggccg cggatccgat cgcgtgcggc cgcggtaccc aattcgccct 60

<210> 30

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing Streptomyces sp CL190
and S. cerevisiae DNA

<400> 30
tgtcattgaa aagatatgag gatcctctag gtacttccct ggcgtgtgca gcggttgacg 60

<210> 31

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing Streptomyces sp CL190 DNA

<400> 31
cgattccgca ttatcggtac gggtgcctac ctagaactag tggatccccc gggctgcagg 60

<210> 32

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and S. cerevisiae DNA

<400> 32
ctttcctgaa acataattta taatcagatc ggccgcagga ggagttcata tgtcagagtt 60

<210> 33

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and R. capsulatus DNA

<400> 33
ttcggatcga tcctgcgcgg ctgagcggcc gatctaaaca aacccggaac agaccgttgg 60

<210> 34

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and S. cerevisiae DNA

<400> 34
ctttcctgaa acataattta taatcagatc ggccgcagga ggagttcata tgtcagagt 59

<210> 35

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and S. pombe DNA

<400> 35
tcgttgctaa ggatcccccg ggatccggcc gatctaaaca aacccggaac agaccgttgg 60

<210> 36

<211> 13

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing NotI restriction site

<400> 36
catggcggcc gcg 13

<210> 37

<211> 13

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing NotI restriction site

<400> 37
gatccgcggc cgc 13

<210> 38

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 38
ttaaataagg aggaataaac catggcggcc gcaggaggag ttcatatgtc agagttgaga 60

<210> 39

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing A. thaliana DNA

<400> 39

aacaacaaca acatgacccg ggatccggcc gcgatccgag ctcgagatct gcagctggta 60

<210> 40

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 40
tcgattaaat aaggaggaat aaaccatggc ggccgcagga ggagttcata tgtcagagtt 60

<210> 41

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing R. capsulatus DNA

<400> 41
gattttcgga tcgatcctgc gcggctgagc ggccgcgatc cgagctcgag atctgcagct 60

<210> 42

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. cerevisiae DNA

<400> 42
tcgattaaat aaggaggaat aaaccatggc ggccgcagga ggagttcata tgtcagagtt 60

<210> 43

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. pombe DNA

<400> 43
ttcatcgttg ctaaggatcc cccgggatcc ggccgcgatc cgagctcgag atctgcagct 60

<210> 44

<211> 61

<212> DNA

<213> Artificial Sequence

<220>
<223> Oligonucleotide containing R. capsulatus DNA

<400> 44
ttaaataagg aggaataaac catggcggcc gtaaggaggc acatatgagt gagcttatac 60

t 61

<210> 45

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing R. capsulatus DNA

<400> 45
gcctgcgcgg ctgagcggcc gcggatccga tggccgcgat ccgagctcga gatctgcagc 60

t 61

<210> 46

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. pombe DNA

<400> 46
ttaaataagg aggaataaac catggcggcc gtaggaggca catatgagtt cccaacaaga 60

<210> 47

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing S. pombe DNA

<400> 47
accttaattc atcgttgcta aggatccccc ggccgcgatc cgagctcgag atctgcagct 60

<210> 48

<211> 1356

<212> DNA

<213> Saccharomyces cerevisiae

<400> 48
atgtcagagt tgagagcctt cagtgcccca gggaaagcgt tactagctgg tggatattta 60

gttttagata caaaatatga agcatttgta gtcggattat cggcaagaat gcatgctgta 120

gcccatcctt acggttcatt gcaagggtct gataagtttg aagtgcgtgt gaaaagtaaa 180

caatttaaag atggggagtg gctgtaccat ataagtccta aaagtggctt cattcctgtt 240

tcgataggcg gatctaagaa ccctttcatt gaaaaagtta tcgctaacgt atttagctac 300

tttaaaccta acatggacga ctactgcaat agaaacttgt tcgttattga tattttctct 360

gatgatgcct accattctca ggaggatagc gttaccgaac atcgtggcaa cagaagattg 420

agttttcatt cgcacagaat tgaagaagtt cccaaaacag ggctgggctc ctcggcaggt 480

ttagtcacag ttttaactac agctttggcc tccttttttg tatcggacct ggaaaataat 540

gtagacaaat atagagaagt tattcataat ttagcacaag ttgctcattg tcaagctcag 600

ggtaaaattg gaagcgggtt tgatgtagcg gcggcagcat atggatctat cagatataga 660

agattcccac ccgcattaat ctctaatttg ccagatattg gaagtgctac ttacggcagt 720

aaactggcgc atttggttga tgaagaagac tggaatatta cgattaaaag taaccattta 780

ccttcgggat taactttatg gatgggcgat attaagaatg gttcagaaac agtaaaactg 840

gtccagaagg taaaaaattg gtatgattcg catatgccag aaagcttgaa aatatataca 900

gaactcgatc atgcaaattc tagatttatg gatggactat ctaaactaga tcgcttacac 960

gagactcatg acgattacag cgatcagata tttgagtctc ttgagaggaa tgactgtacc 1020

tgtcaaaagt atcctgaaat cacagaagtt agagatgcag ttgccacaat tagacgttcc 1080

tttagaaaaa taactaaaga atctggtgcc gatatcgaac ctcccgtaca aactagctta 1140

ttggatgatt gccagacctt aaaaggagtt cttacttgct taatacctgg tgctggtggt 1200

tatgacgcca ttgcagtgat tactaagcaa gatgttgatc ttagggctca aaccgctaat 1260

gacaaaagat tttctaaggt tcaatggctg gatgtaactc aggctgactg gggtgttagg 1320

aaagaaaaag atccggaaac ttatcttgat aaataa 1356

<210> 49

<211> 1332

<212> DNA

<213> Saccharomyces cerevisiae

<400> 49

atgtcattac cgttcttaac ttctgcaccg ggaaaggtta ttatttttgg tgaacactct 60

gctgtgtaca acaagcctgc cgtcgctgct agtgtgtctg cgttgagaac ctacctgcta 120

ataagcgagt catctgcacc agatactatt gaattggact tcccggacat tagctttaat 180

cataagtggt ccatcaatga tttcaatgcc atcaccgagg atcaagtaaa ctcccaaaaa 240

ttggccaagg ctcaacaagc caccgatggc ttgtctcagg aactcgttag tcttttggat 300

ccgttgttag ctcaactatc cgaatccttc cactaccatg cagcgttttg tttcctgtat 360

atgtttgttt gcctatgccc ccatgccaag aatattaagt tttctttaaa gtctacttta 420

cccatcggtg ctgggttggg ctcaagcgcc tctatttctg tatcactggc cttagctatg 480

gcctacttgg gggggttaat aggatctaat gacttggaaa agctgtcaga aaacgataag 540

catatagtga atcaatgggc cttcataggt gaaaagtgta ttcacggtac cccttcagga 600

atagataacg ctgtggccac ttatggtaat gccctgctat ttgaaaaaga ctcacataat 660

ggaacaataa acacaaacaa ttttaagttc ttagatgatt tcccagccat tccaatgatc 720

ctaacctata ctagaattcc aaggtctaca aaagatcttg ttgctcgcgt tcgtgtgttg 780

gtcaccgaga aatttcctga agttatgaag ccaattctag atgccatggg tgaatgtgcc 840

ctacaaggct tagagatcat gactaagtta agtaaatgta aaggcaccga tgacgaggct 900

gtagaaacta ataatgaact gtatgaacaa ctattggaat tgataagaat aaatcatgga 960

ctgcttgtct caatcggtgt ttctcatcct ggattagaac ttattaaaaa tctgagcgat 1020

gatttgagaa ttggctccac aaaacttacc ggtgctggtg gcggcggttg ctctttgact 1080

ttgttacgaa gagacattac tcaagagcaa attgacagct tcaaaaagaa attgcaagat 1140

gattttagtt acgagacatt tgaaacagac ttgggtggga ctggctgctg tttgttaagc 1200

gcaaaaaatt tgaataaaga tcttaaaatc aaatccctag tattccaatt atttgaaaat 1260

aaaactacca caaagcaaca aattgacgat ctattattgc caggaaacac gaatttacca 1320

tggacttcat aa 1332

<210> 50

<211> 1191

<212> DNA

<213> Saccharomyces cerevisiae

<400> 50

atgaccgttt acacagcatc cgttaccgca cccgtcaaca tcgcaaccct taagtattgg 60

gggaaaaggg acacgaagtt gaatctgccc accaattcgt ccatatcagt gactttatcg 120

caagatgacc tcagaacgtt gacctctgcg gctactgcac ctgagtttga acgcgacact 180

ttgtggttaa atggagaacc acacagcatc gacaatgaaa gaactcaaaa ttgtctgcgc 240

gacctacgcc aattaagaaa ggaaatggaa tcgaaggacg cctcattgcc cacattatct 300

caatggaaac tccacattgt ctccgaaaat aactttccta cagcagctgg tttagcttcc 360

tccgctgctg gctttgctgc attggtctct gcaattgcta agttatacca attaccacag 420

tcaacttcag aaatatctag aatagcaaga aaggggtctg gttcagcttg tagatcgttg 480

tttggcggat acgtggcctg ggaaatggga aaagctgaag atggtcatga ttccatggca 540

gtacaaatcg cagacagctc tgactggcct cagatgaaag cttgtgtcct agttgtcagc 600

gatattaaaa aggatgtgag ttccactcag ggtatgcaat tgaccgtggc aacctccgaa 660

ctatttaaag aaagaattga acatgtcgta ccaaagagat ttgaagtcat gcgtaaagcc 720

attgttgaaa aagatttcgc caccttgca aaggaaacaa tgatggattc caactctttc 780

catgccacat gtttggactc tttccctcca atattctaca tgaatgacac ttccaagcgt 840

atcatcagtt ggtgccacac cattaatcag ttttacggag aaacaatcgt tgcatacacg 900

tttgatgcag gtccaaatgc tgtgttgtac tacttagctg aaaatgagtc gaaactcttt 960

gcatttatct ataaattgtt tggctctgtt cctggatggg acaagaaatt tactactgag 1020

cagcttgagg ctttcaacca tcaatttgaa tcatctaact ttactgcacg tgaattggat 1080

cttgagttgc aaaaggatgt tgccagagtg attttaactc aagtcggttc aggcccacaa 1140

gaaacaaacg aatctttgat tgacgcaaag actggtctac caaaggaata a 1191

<210> 51

<211> 1197

<212> DNA

<213> Saccharomyces cerevisiae

<400> 51

atgtctcaga acgtttacat tgtatcgact gccagaaccc caattggttc attccagggt 60

tctctatcct ccaagacagc agtggaattg ggtgctgttg ctttaaaagg cgccttggct 120

aaggttccag aattggatgc atccaaggat tttgacgaaa ttatttttgg taacgttctt 180

tctgccaatt tgggccaagc tccggccaga caagttgctt tggctgccgg tttgagtaat 240

catatcgttg caagcacagt taacaaggtc tgtgcatccg ctatgaaggc aatcattttg 300

ggtgctcaat ccatcaaatg tggtaatgct gatgttgtcg tagctggtgg ttgtgaatct 360

atgactaacg caccatacta catgccagca gcccgtgcgg gtgccaaatt tggccaaact 420

gttcttgttg atggtgtcga aagagatggg ttgaacgatg cgtacgatgg tctagccatg 480

ggtgtacacg cagaaaagtg tgcccgtgat tgggatatta ctagagaaca acaagacaat 540

tttgccatcg aatcctacca aaaatctcaa aaatctcaaa aggaaggtaa attcgacaat 600

gaaattgtac ctgttaccat taagggattt agaggtaagc ctgatactca agtcacgaag 660

gacgaggaac ctgctagatt acacgttgaa aaattgagat ctgcaaggac tgttttccaa 720

aaagaaaacg gtactgttac tgccgctaac gcttctccaa tcaacgatgg tgctgcagcc 780

gtcatcttgg tttccgaaaa agttttgaag gaaaagaatt tgaagccttt ggctattatc 840

aaaggttggg gtgaggccgc tcatcaacca gctgatttta catgggctcc atctcttgca 900

gttccaaagg ctttgaaaca tgctggcatc gaagacatca attctgttga ttactttgaa 960

ttcaatgaag ccttttcggt tgtcggtttg gtgaacacta agattttgaa gctagaccca 1020

tctaaggtta atgtatatgg tggtgctgtt gctctaggtc acccattggg ttgttctggt 1080

gctagagtgg ttgttacact gctatccatc ttacagcaag aaggaggtaa gatcggtgtt 1140

gccgccattt gtaatggtgg tggtggtgct tcctctattg tcattgaaaa gatatga 1197

<210> 52

<211> 1386

<212> DNA

<213> Arabidopsis thaliana

<400> 52

atggcgaaga acgttgggat tttggctatg gatatctatt tccctcccac ctgtgttcaa 60

caggaagctt tggaagcaca tgatggagca agtaaaggga aatacactat tggacttggc 120

caagattgtt tagcttttg cactgagctt gaagatgtta tctctatgag tttcaatgcg 180

gtgacatcac tttttgagaa gtataagatt gaccctaacc aaatcgggcg tcttgaagta 240

ggaagtgaga ctgttattga caaaagcaag tccatcaaga ccttcttgat gcagctcttt 300

gagaaatgtg gaaacactga tgtcgaaggt gttgactcga ccaatgcttg ctatggtgga 360

actgcagctt tgttaaactg tgtcaattgg gttgagagta actcttggga tggacgttat 420

ggcctcgtca tttgtactga cagcgcggtt tatgcagaag gacccgcaag gcccactgga 480

ggagctgcag cgattgctat gttgatagga cctgatgctc ctatcgtttt cgaaagcaaa 540

ttgagagcaa gccacatggc tcatgtctat gacttttaca agcccaatct tgctagcgag 600

tacccggttg ttgatggtaa gctttcacag acttgctacc tcatggctct tgactcctgc 660

tataaacatt tatgcaacaa gttcgagaag atcgagggca aagagttctc cataaatgat 720

gctgattaca ttgttttcca ttctccatac aataaacttg tacagaaaag ctttgctcgt 780

ctcttgtaca acgacttctt gagaaacgca agctccattg acgaggctgc caaagaaaag 840

ttcacccctt attcatcttt gacccttgac gagagttacc aaagccgtga tcttgaaaag 900

gtgtcacaac aaatttcgaa accgttttat gatgctaaag tgcaaccaac gactttaata 960

ccaaaggaag tcggtaacat gtacactgct tctctctacg ctgcatttgc ttccctcatc 1020

cacaataaac acaatgattt ggcgggaaag cgggtggtta tgttctctta tggaagtggc 1080

tccaccgcaa caatgttctc attacgcctc aacgacaata agcctccttt cagcatttca 1140

aacattgcat ctgtaatgga tgttggcggt aaattgaaag ctagacatga gtatgcacct 1200

gagaagtttg tggagacaat gaagctaatg gaacataggt atggagcaaa ggactttgtg 1260

acaaccaagg agggtattat agatcttttg gcaccgggaa cttattatct gaaagaggtt 1320

gattccttgt accggagatt ctatggcaag aaaggtgaag atggatctgt agccaatgga 1380

cactga 1386

<210> 53

<211> 1779

<212> DNA

<213> Arabidopsis thaliana

<400> 53

atggatctcc gtcggaggcc tcctaaacca ccggttacca acaacaacaa ctccaacgga 60

tctttccgtt cttatcagcc tcgcacttcc gatgacgatc atcgtcgccg ggctacaaca 120

attgctcctc caccgaaagc atccgacgcg cttcctcttc cgttatatct cacaaacgcc 180

gttttcttca cgctcttctt ctccgtcgcg tattacctcc tccaccggtg gcgtgacaag 240

atccgttaca atacgcctct tcacgtcgtc actatcacag aactcggcgc cattattgct 300

ctcatcgctt cgtttatcta tctcctaggg ttttttggta ttgactttgt tcagtcattt 360

atctcacgtg cctctggtga tgcttgggat ctcgccgata cgatcgatga tgatgaccac 420

cgccttgtca cgtgctctcc accgactccg atcgtttccg ttgctaaatt acctaatccg 480

gaacctattg ttaccgaatc gcttcctgag gaagacgagg agattgtgaa atcggttatc 540

gacggagtta ttccatcgta ctcgcttgaa tctcgtctcg gtgattgcaa aagagcggcg 600

tcgattcgtc gtgaggcgtt gcagagagtc accgggagat cgattgaagg gttaccgttg 660

gatggatttg attatgaatc gattttgggg caatgctgtg agatgcctgt tggatacatt 720

cagattcctg ttgggattgc tggtccattg ttgcttgatg gttatgagta ctctgttcct 780

atggctacaa ccgaaggttg tttggttgct agcactaaca gaggctgcaa ggctatgttt 840

atctctggtg gcgccaccag taccgttctt aaggacggta tgacccgagc acctgttgtt 900

cggttcgctt cggcgagacg agcttcggag cttaagtttt tcttggagaa tccagagaac 960

tttgatactt tggcagtagt cttcaacagg tcgagtagat ttgcaagact gcaaagtgtt 1020

aaatgcacaa tcgcggggaa gaatgcttat gtaaggttct gttgtagtac tggtgatgct 1080

atggggatga atatggtttc taaaggtgtg cagaatgttc ttgagtatct taccgatgat 1140

ttccctgaca tggatgtgat tggaatctct ggtaacttct gttcggacaa gaaacctgct 1200

gctgtgaact ggattgaggg acgtggtaaa tcagttgttt gcgaggctgt aatcagagga 1260

gagatcgtga acaaggtctt gaaaacgagc gtggctgctt tagtcgagct caacatgctc 1320

aagaacctag ctggctctgc tgttgcaggc tctctaggtg gattcaacgc tcatgccagt 1380

aacatagtgt ctgctgtatt catagctact ggccaagatc cagctcaaaa cgtggagagt 1440

tctcaatgca tcaccatgat ggaagctatt aatgacggca aagatatcca tatctcagtc 1500

actatgccat ctatcgaggt ggggacagtg ggaggaggaa cacagcttgc atctcaatca 1560

gcgtgtttaa acctgctcgg agttaaagga gcaagcacag agtcgccggg aatgaacgca 1620

aggaggctag cgacgatcgt agccggagca gttttagctg gagagttatc tttaatgtca 1680

gcaattgcag ctggacagct tgtgagaagt cacatgaaat acaatagatc cagccgagac 1740

atctctggag caacgacaac gacaacaaca acaacatga 1779

<210> 54

<211> 684

<212> DNA

<213> Artificial Sequence

<220>

<223> Schizosaccharomyces pombe IDI1 (IPP isomerase)

<400> 54

atgagttccc aacaagagaa aaaggattat gatgaagaac aattaaggtt gatggaagaa 60

gtttgtatcg ttgtagatga aaatgatgtc cctttaagat atggaacgaa aaaggagtgt 120

catttgatgg aaaatataaa taaaggtctt ttgcatagag cattctctat gttcatcttt 180

gatgagcaaa atcgcctttt acttcagcag cgtgcagaag agaaaattac atttccatcc 240

ttatggacga atacatgttg ctcccaccca ttggatgttg ctggtgaacg tggtaatact 300

ttacctgaag ctgttgaagg tgttaagaat gcagctcaac gcaagctgtt ccatgaattg 360

ggtattcaag ccaagtatat tcccaaagac aaatttcagt ttcttacacg aatccattac 420

cttgctccta gtactggtgc ttggggagag catgaaattg actacattct tttcttcaaa 480

ggtaaagttg agctggatat caatcccaat gaagttcaag cctataagta tgttactatg 540

gaagagttaa aagagatgtt ttccgatcct caatatggat tcacaccatg gttcaaactt 600

atttgtgagc attttatgtt taaatggtgg caggatgtag atcatgcgtc aaaattccaa 660

gataccttaa ttcatcgttg ctaa 684

<210> 55

<211> 531

<212> DNA

<213> Artificial Sequence

<220>

<223> Rhodobacter capsulatus idiB (IPP isomerase)

<400> 55
atgagtgagc ttatacccgc ctgggttggt gacagactgg ctccggtgga caagttggag 60

gtgcatttga aagggctccg ccacaaggcg gtgtctgttt tcgtcatgga tggcgaaaac 120

gtgctgatcc agcgccgctc ggaggagaaa tatcactctc ccgggctttg ggcgaacacc 180

tgctgcaccc atccgggctg gaccgaacgc cccgaggaat gcgcggtgcg gcggctgcgc 240

gaggagctgg ggatcaccgg gctttatccc gcccatgccg accggctgga atatcgcgcc 300

gatgtcggcg gcggcatgat cgagcatgag gtggtcgaca tctatctggc ctatgccaaa 360

ccgcatatgc ggatcacccc cgatccgcgc gaagtggccg aggtgcgctg gatcggcctt 420

tacgatctgg cggccgaggc cggtcggcat cccgagcggt tctcgaaatg gctcaacatc 480

tatctgtcga gccatcttga ccggattttc ggatcgatcc tgcgcggctg a 531

<210> 56

<211> 1059

<212> DNA

<213> Streptomyces sp.

<400> 56
atgacggaaa cgcacgccat agccggggtc ccgatgaggt gggtgggacc ccttcgtatt 60

tccgggaacg tcgccgagac cgagacccag gtcccgctcg ccacgtacga gtcgccgctg 120

tggccgtcgg tgggccgcgg ggcgaaggtc tcccggctga cggagaaggg catcgtcgcc 180

accctcgtcg acgagcggat gacccgctcg gtgatcgtcg aggcgacgga cgcgcagacc 240

gcgtacatgg ccgcgcagac catccacgcc cgcatcgacg agctgcgcga ggtggtgcgc 300

ggctgcagcc ggttcgccca gctgatcaac atcaagcacg agatcaacgc gaacctgctg 360

ttcatccggt tcgagttcac caccggtgac gcctccggcc acaacatggc cacgctcgcc 420

tccgatgtgc tcctggggca cctgctggag acgatccctg gcatctccta cggctcgatc 480

tccggcaact actgcacgga caagaaggcc accgcgatca acggcatcct cggccgcggc 540

aagaacgtga tcaccgagct gctggtgccg cgggacgtcg tcgagaacaa cctgcacacc 600

acggctgcca agatcgtcga gctgaacatc cgcaagaacc tgctcggcac cctgctcgcc 660

ggcggcatcc gctcggccaa cgcccacttc gcgaacatgc tgctcggctt ctacctggcc 720

accggccagg acgccgccaa catcgtcgag ggctcgcagg gcgtcgtcat ggccgaggac 780

cgcgacggcg acctctactt cgcctgcacc ctgccgaacc tgatcgtcgg cacggtcggc 840

aacggcaagg gtctcggctt cgtggagacg aacctcgccc ggctcggctg ccgagccgac 900

cgcgaacccg gggagaacgc ccgccgcctc gccgtcatcg cggcagcgac cgtgctgtgc 960

ggtgaactct cgctgctcgc ggcacagacg aacccgggcg aactcatgcg cgcgcacgtc 1020

cagctggaac gcgacaacaa gaccgcaaag gttggtgca 1059

<210> 57

<211> 6798

<212> DNA

<213> Artificial Sequence

<220>

<223> Streptomyces sp CL190 gene cluster containing mevalonate pathway and IPP isomerase orfs

<400> 57

tacgtacttc cctggcgtgt gcagcggttg acgcgccgtg ccctcgctgc gagcggcgcg 60

cacatctgac gtcctgcttt attgctttct cagaactcgg gacgaagcga tcccatgatc 120

acgcgatctc catgcagaaa agacaaaggg agctgagtgc gttgacacta ccgacctcgg 180

ctgaggggggt atcagaaagc caccgggccc gctcggtcgg catcggtcgc gcccacgcca 240

aggccatcct gctgggagag catgcggtcg tctacggagc gccggcactc gctctgccga 300

ttccgcagct cacggtcacg gccagcgtcg gctggtcgtc cgaggcctcc gacagtgcgg 360

gtggcctgtc ctacacgatg accggtacgc cgtcgcgggc actggtgacg caggcctccg 420

acggcctgca ccggctcacc gcggaattca tggcgcggat gggcgtgacg aacgcgccgc 480

acctcgacgt gatcctggac ggcgcgatcc cgcacggccg gggtctcggc tccagcgcgg 540

ccggctcacg cgcgatcgcc ttggccctcg ccgacctctt cggccacgaa ctggccgagc 600

acacggcgta cgaactggtg cagacggccg agaacatggc gcacggccgg gccagcggcg 660

tggacgcgat gacggtcggc gcgtcccggc cgctgctgtt ccagcagggc cgcaccgagc 720

gactggccat cggctgcgac agcctgttca tcgtcgccga cagcggcgtc ccgggcagca 780

ccaaggaagc ggtcgagatg ctgcgggagg gattcacccg cagcgccgga acacaggagc 840

ggttcgtcgg ccgggcgacg gaactgaccg aggccgcccg gcaggccctc gccgacggcc 900

ggcccgagga gctgggctcg cagctgacgt actaccacga gctgctccat gaggcccgcc 960

tgagcaccga cggcatcgat gcgctggtcg aggccgcgct gaaggcaggc agcctcggag 1020

ccaagatcac cggcggtggt ctgggcggct gcatgatcgc acaggcccgg cccgaacagg 1080

cccgggaggt cacccggcag ctccacgagg ccggtgccgt acagacctgg gtcgtaccgc 1140

tgaaagggct cgacaaccat gcgcagtgaa cacccgacca cgaccgtgct ccagtcgcgg 1200

gagcagggca gcgcggccgg cgccaccgcg gtcgcgcacc caaacatcgc gctgatcaag 1260

tactggggca agcgcgacga gcggctgatc ctgccctgca ccaccagcct gtcgatgacg 1320

ctggacgtct tccccacgac caccgaggtc cggctcgacc ccgccgccga gcacgacacg 1380

gccgccctca acggcgaggt ggccacgggc gagacgctgc gccgcatcag cgccttcctc 1440

tccctggtgc gggaggtggc gggcagcgac cagcgggccg tggtggacac ccgcaacacc 1500

gtgcccaccg gggcgggcct ggcgtcctcc gccagcgggt tcgccgccct cgccgtcgcg 1560

gccgcggccg cctacgggct cgaactcgac gaccgcgggc tgtcccggct ggcccgacgt 1620

ggatccggct ccgcctcgcg gtcgatcttc ggcggcttcg ccgtctggca cgccggcccc 1680

gacggcacgg ccacggaagc ggacctcggc tcctacgccg agccggtgcc cgcggccgac 1740

ctcgacccgg cgctggtcat cgccgtggtc aacgccggcc ccaagcccgt ctccagccgc 1800

gaggccatgc gccgcaccgt cgacacctcg ccgctgtacc ggccgtgggc cgactccagt 1860

aaggacgacc tggacgagat gcgctcggcg ctgctgcgcg gcgacctcga ggccgtgggc 1920

gagatcgcgg agcgcaacgc gctcggcatg cacgccacca tgctggccgc ccgccccgcg 1980

gtgcggtacc tgtcgccggc cacggtcacc gtgctcgaca gcgtgctcca gctccgcaag 2040

gacggtgtcc tggcctacgc gaccatggac gccggtccca acgtgaaggt gctgtgccgg 2100

cgggcggacg ccgagcgggt ggccgacgtc gtacgcgccg ccgcgtccgg cggtcaggtc 2160

ctcgtcgccg ggccgggaga cggtgcccgc ctgctgagcg agggcgcatg acgacaggtc 2220

agcgcacgat cgtccggcac gcgccgggca agctgttcgt cgcgggcgag tacgcggtcg 2280

tggatccggg caacccggcg atcctggtag cggtcgaccg gcacatcagc gtcaccgtgt 2340

ccgacgccga cgcggacacc ggggccgccg acgtcgtgat ctcctccgac ctcggtccgc 2400

aggcggtcgg ctggcgctgg cacgacggcc ggctcgtcgt ccgcgacccg gacgacgggc 2460

agcaggcgcg cagcgccctg gcccacgtgg tgtcggcgat cgagaccgtg ggccggctgc 2520

tgggcgaacg cggacagaag gtccccgctc tcaccctctc cgtcagcagc cgcctgcacg 2580

aggacggccg gaagttcggc ctgggctcca gcggcgcggt gaccgtggcg accgtagccg 2640

ccgtcgccgc gttctgcgga ctcgaactgt ccaccgacga acggttccgg ctggccatgc 2700

tcgccaccgc ggaactcgac cccaagggct ccggcgggga cctcgccgcc agcacctggg 2760

gcggctggat cgcctaccag gcgcccgacc gggcctttgt gctcgacctg gcccggcgcg 2820

tgggagtcga ccggacactg aaggcgccct ggccggggca ctcggtgcgc cgactgccgg 2880

cgcccaaggg cctcaccctg gaggtcggct ggaccggaga gcccgcctcc accgcgtccc 2940

tggtgtccga tctgcaccgc cgcacctggc ggggcagcgc ctcccaccag aggttcgtcg 3000

agaccacgac cgactgtgtc cgctccgcgg tcaccgccct ggagtccggc gacgacacga 3060

gcctgctgca cgagatccgc cgggcccgcc aggagctggc ccgcctggac gacgaggtcg 3120

gcctcggcat cttcacaccc aagctgacgg cgctgtgcga cgccgccgaa gccgtcggcg 3180

gcgcggccaa gccctccggg gcaggcggcg gcgactgcgg catcgccctg ctggacgccg 3240

aggcgtcgcg ggacatcaca catgtacggc aacggtggga gacagccggg gtgctgcccc 3300

tgcccctgac tcctgccctg gaagggatct aagaatgacc agcgcccaac gcaaggacga 3360

ccacgtacgg ctcgccatcg agcagcacaa cgcccacagc ggacgcaacc agttcgacga 3420

cgtgtcgttc gtccaccacg ccctggccgg catcgaccgg ccggacgtgt ccctggccac 3480

gtccttcgcc gggatctcct ggcaggtgcc gatctacatc aacgcgatga ccggcggcag 3540

cgagaagacc ggcctcatca accgggacct ggccaccgcc gcccgcgaga ccggcgtccc 3600

catcgcgtcc gggtccatga acgcgtacat caaggacccc tcctgcgccg acacgttccg 3660

tgtgctgcgc gacgagaacc ccaacgggtt cgtcatcgcg aacatcaacg ccaccacgac 3720

ggtcgacaac gcgcagcgcg cgatcgacct gatcgaggcg aacgccctgc agatccacat 3780

caacacggcg caggagacgc cgatgccgga gggcgaccgg tcgttcgcgt cctgggtccc 3840

gcagatcgag aagatcgcgg cggccgtcga catccccgtg atcgtcaagg aggtcggcaa 3900

cggcctgagc cggcagacca tcctgctgct cgccgacctc ggcgtgcagg cggcggacgt 3960

cagcggccgc ggcggcacgg acttcgcccg catcgagaac ggccgccggg agctcggcga 4020

ctacgcgttc ctgcacggct gggggcagtc caccgccgcc tgcctgctgg acgcccagga 4080

catctccctg cccgtcctcg cctccggcgg tgtgcgtcac ccgctcgacg tggtccgcgc 4140

cctcgcgctc ggcgcccgcg ccgtcggctc ctccgccggc ttcctgcgca ccctgatgga 4200

cgacggcgtc gacgcgctga tcacgaagct cacgacctgg ctggaccagc tggcggcgct 4260

gcagaccatg ctcggcgcgc gcaccccggc cgacctcacc cgctgcgacg tgctgctcca 4320

cggcgagctg cgtgacttct gcgccgaccg gggcatcgac acgcgccgcc tcgcccagcg 4380

ctccagctcc atcgaggccc tccagacgac gggaagcaca cgatgacgga aacgcacgcc 4440

atagccgggg tcccgatgag gtgggtggga ccccttcgta tttccgggaa cgtcgccgag 4500

accgagaccc aggtcccgct cgccacgtac gagtcgccgc tgtggccgtc ggtgggccgc 4560

ggggcgaagg tctcccggct gacggagaag ggcatcgtcg ccaccctcgt cgacgagcgg 4620

atgacccgct cggtgatcgt cgaggcgacg gacgcgcaga ccgcgtacat ggccgcgcag 4680

accatccacg cccgcatcga cgagctgcgc gaggtggtgc gcggctgcag ccggttcgcc 4740

cagctgatca acatcaagca cgagatcaac gcgaacctgc tgttcatccg gttcgagttc 4800

accaccggtg acgcctccgg ccacaacatg gccacgctcg cctccgatgt gctcctgggg 4860

cacctgctgg agacgatccc tggcatctcc tacggctcga tctccggcaa ctactgcacg 4920

gacaagaagg ccaccgcgat caacggcatc ctcggccgcg gcaagaacgt gatcaccgag 4980

ctgctggtgc cgcgggacgt cgtcgagaac aacctgcaca ccacggctgc caagatcgtc 5040

gagctgaaca tccgcaagaa cctgctcggc accctgctcg ccggcggcat ccgctcggcc 5100

aacgcccact tcgcgaacat gctgctcggc ttctacctgg ccaccggcca ggacgccgcc 5160

aacatcgtcg agggctcgca gggcgtcgtc atggccgagg accgcgacgg cgacctctac 5220

ttcgcctgca ccctgccgaa cctgatcgtc ggcacggtcg gcaacggcaa gggtctcggc 5280

ttcgtggaga cgaacctcgc ccggctcggc tgccgagccg accgcgaacc cggggagaac 5340

gcccgccgcc tcgccgtcat cgcggcagcg accgtgctgt gcggtgaact ctcgctgctc 5400

gcggcacaga cgaacccggg cgaactcatg cgcgcgcacg tccagctgga acgcgacaac 5460

aagaccgcaa aggttggtgc atagggcatg tccatctcca taggcattca cgacctgtcg 5520

ttcgccacaa ccgagttcgt cctgccgcac acggcgctcg ccgagtacaa cggcaccgag 5580

atcggcaagt accacgtcgg catcggccag cagtcgatga gcgtgccggc cgccgacgag 5640

gacatcgtga ccatggccgc gaccgcggcg cggcccatca tcgagcgcaa cggcaagagc 5700

cggatccgca cggtcgtgtt cgccacggag tcgtcgatcg accaggcgaa ggcgggcggc 5760

gtgtacgtgc actccctgct ggggctggag tcggcctgcc gggtcgtcga gctgaagcag 5820

gcctgctacg gggccaccgc cgcccttcag ttcgccatcg gcctggtgcg gcgcgacccc 5880

gcccagcagg tcctggtcat cgccagtgac gtctccaagt acgagctgga cagccccggc 5940

gaggcgaccc agggcgcggc cgcggtggcc atgctggtcg gcgccgaccc ggccctgctg 6000

cgtatcgagg agccgtcggg cctgttcacc gccgacgtca tggacttctg gcggcccaac 6060

tacctcacca ccgctctggt cgacggccag gagtccatca acgcctacct gcaggccgtc 6120

gagggcgcct ggaaggacta cgcggagcag gacggccggt cgctggagga gttcgcggcg 6180

ttcgtctacc accagccgtt cacgaagatg gcctacaagg cgcaccgcca cctgctgaac 6240

ttcaacggct acgacaccga caaggacgcc atcgagggcg ccctcggcca gacgacggcg 6300

tacaacaacg tcatcggcaa cagctacacc gcgtcggtgt acctgggcct ggccgccctg 6360

ctcgaccagg cggacgacct gacgggccgt tccatcggct tcctgagcta cggctcgggc 6420

agcgtcgccg agttcttctc gggcaccgtc gtcgccgggt accgcgagcg tctgcgcacc 6480

gaggcgaacc aggaggcgat cgcccggcgc aagagcgtcg actacgccac ctaccgcgag 6540

ctgcacgagt acacgctccc gtccgacggc ggcgaccacg ccaccccggt gcagaccacc 6600

ggcccccttcc ggctggccgg gatcaacgac cacaagcgca tctacgaggc gcgctagcga 6660

caccctcgg caacggggtg cgccactgtt cggcgcaccc cgtgccgggc tttcgcacag 6720

ctattcacga ccatttgagg ggcgggcagc cgcatgaccg acgtccgatt ccgcattatc 6780

ggtacgggtg cctacgta 6798

<210> 58

<211> 7693

<212> DNA

<213> Artificial Sequence

<220>

<223> Operon containing A. thaliana and S. cerevisiae DNA

<400> 58

ggccgcgtcg acgccggcgg aggcacatat gtctcagaac gtttacattg tatcgactgc 60

cagaacccca attggttcat tccagggttc tctatcctcc aagacagcag tggaattggg 120

tgctgttgct ttaaaaggcg ccttggctaa ggttccagaa ttggatgcat ccaaggattt 180

tgacgaaatt atttttggta acgttctttc tgccaatttg ggccaagctc cggccagaca 240

agttgctttg gctgccggtt tgagtaatca tatcgttgca agcacagtta acaaggtctg 300

tgcatccgct atgaaggcaa tcattttggg tgctcaatcc atcaaatgtg gtaatgctga 360

tgttgtcgta gctggtggtt gtgaatctat gactaacgca ccatactaca tgccagcagc 420

ccgtgcgggt gccaaatttg gccaaactgt tcttgttgat ggtgtcgaaa gagatgggtt 480

gaacgatgcg tacgatggtc tagccatggg tgtacacgca gaaaagtgtg cccgtgattg 540

ggatattact agagaacaac aagacaattt tgccatcgaa tcctaccaaa aatctcaaaa 600

atctcaaaag gaaggtaaat tcgacaatga aattgtacct gttaccatta agggatttag 660

aggtaagcct gatactcaag tcacgaagga cgaggaacct gctagattac acgttgaaaa 720

attgagatct gcaaggactg ttttccaaaa agaaaacggt actgttactg ccgctaacgc 780

ttctccaatc aacgatggtg ctgcagccgt catcttggtt tccgaaaaag ttttgaagga 840

aaagaatttg aagcctttgg ctattatcaa aggttggggt gaggccgctc atcaaccagc 900

tgattttaca tgggctccat ctcttgcagt tccaaaggct ttgaaacatg ctggcatcga 960

agacatcaat tctgttgatt actttgaatt caatgaagcc ttttcggttg tcggtttggt 1020

gaacactaag attttgaagc tagacccatc taaggttaat gtatatggtg gtgctgttgc 1080

tctaggtcac ccattgggtt gttctggtgc tagagtggtt gttacactgc tatccatctt 1140

acagcaagaa ggaggtaaga tcggtgttgc cgccatttgt aatggtggtg gtggtgcttc 1200

ctctattgtc attgaaaaga tatgaggatc ctctagatgc gcaggaggca catatggcga 1260

agaacgttgg gattttggct atggatatct atttccctcc cacctgtgtt caacaggaag 1320

ctttggaagc acatgatgga gcaagtaaag ggaaatacac tattggactt ggccaagatt 1380

gtttagcttt ttgcactgag cttgaagatg ttatctctat gagtttcaat gcggtgacat 1440

cacttttga gaagtataag attgacccta accaaatcgg gcgtcttgaa gtaggaagtg 1500

agactgttat tgacaaaagc aagtccatca agaccttctt gatgcagctc tttgagaaat 1560

gtggaaacac tgatgtcgaa ggtgttgact cgaccaatgc ttgctatggt ggaactgcag 1620

ctttgttaaa ctgtgtcaat tgggttgaga gtaactcttg ggatggacgt tatggcctcg 1680

tcatttgtac tgacagcgcg gtttatgcag aaggacccgc aaggcccact ggaggagctg 1740

cagcgattgc tatgttgata ggtcctgatg ctcctatcgt tttcgaaagc aaattgagag 1800

caagccacat ggctcatgtc tatgactttt acaagcccaa tcttgctagc gagtacccgg 1860

ttgttgatgg taagctttca cagacttgct acctcatggc tcttgactcc tgctataaac 1920

atttatgcaa caagttcgag aagatcgagg gcaaagagtt ctccataaat gatgctgatt 1980

acattgtttt ccattctcca tacaataaac ttgtacagaa aagctttgct cgtctcttgt 2040

acaacgactt cttgagaaac gcaagctcca ttgacgaggc tgccaaagaa aagttcaccc 2100

cttattcatc tttgaccctt gacgagagtt accaaagccg tgatcttgaa aaggtgtcac 2160

aacaaattgc gaaaccgttt tatgatgcta aagtgcaacc aacgacttta ataccaaagg 2220

aagtcggtaa catgtacact gcttctctct acgctgcatt tgcttccctc atccacaaga 2280

aacacaatga tttggcggga aagcgggtgg ttatgttctc ttatggaagt ggctcaaccg 2340

caacaatgtt ctcattacgc ctcaacgaca ataagcctcc tttcagcatt tcaaacattg 2400

catctgtaat ggatgttggc ggtaaattga aagctagaca tgagtatgca cctgagaagt 2460

ttgtggagac aatgaagcta atggaacata ggtatggagc aaaggacttt gtgacaacca 2520

aggagggtat tatagatctt ttggcaccgg gaacttatta tctgaaagag gttgattcct 2580

tgtaccggag attctatggc aagaaaggtg aagatggatc tgtagccaat ggacactgag 2640

gatccgtcga gcacgtggag gcacatatgc aatgctgtga gatgcctgtt ggatacattc 2700

agattcctgt tgggattgct ggtccattgt tgcttgatgg ttatgagtac tctgttccta 2760

tggctacaac cgaaggttgt ttggttgcta gcactaacag aggctgcaag gctatgttta 2820

tctctggtgg cgccaccagt accgttctta aggacggtat gacccgagca cctgttgttc 2880

ggttcgcttc ggcgagacga gcttcggagc ttaagttttt cttggagaat ccagagaact 2940

ttgatacttt ggcagtagtc ttcaacaggt cgagtagatt tgcaagactg caaagtgtta 3000

aatgcacaat cgcggggaag aatgcttatg taaggttctg ttgtagtact ggtgatgcta 3060

tggggatgaa tatggtttct aaaggtgtgc agaatgttct tgagtatctt accgatgatt 3120

tccctgacat ggatgtgatt ggaatctctg gtaacttctg ttcggacaag aaacctgctg 3180

ctgtgaactg gattgaggga cgtggtaaat cagttgtttg cgaggctgta atcagaggag 3240

agatcgtgaa caaggtcttg aaaacgagcg tggctgcttt agtcgagctc aacatgctca 3300

agaacctagc tggctctgct gttgcaggct ctctaggtgg attcaacgct catgccagta 3360

acatagtgtc tgctgtattc atagctactg gccaagatcc agctcaaaac gtggagagtt 3420

ctcaatgcat caccatgatg gaagctatta atgacggcaa agatatccat atctcagtca 3480

ctatgccatc tatcgaggtg gggacagtgg gaggaggaac acagcttgca tctcaatcag 3540

cgtgtttaaa cctgctcgga gttaaaggag caagcacaga gtcgccggga atgaacgcaa 3600

ggaggctagc gacgatcgta gccggagcag ttttagctgg agagttatct ttaatgtcag 3660

caattgcagc tggacagctt gtgagaagtc acatgaaata caatagatcc agccgagaca 3720

tctctggagc aacgacaacg acaacaacaa caacatgacc cgggatccgg ccgcaggagg 3780

agttcatatg tcagagttga gagccttcag tgccccaggg aaagcgttac tagctggtgg 3840

atatttagtt ttagatacaa aatatgaagc atttgtagtc ggattatcgg caagaatgca 3900

tgctgtagcc catccttacg gttcattgca agggtctgat aagtttgaag tgcgtgtgaa 3960

aagtaaacaa tttaaagatg gggagtggct gtaccatata agtcctaaaa gtggcttcat 4020

tcctgtttcg ataggcggat ctaagaaccc tttcattgaa aaagttatcg ctaacgtatt 4080

tagctacttt aaacctaaca tggacgacta ctgcaataga aacttgttcg ttattgatat 4140

tttctctgat gatgcctacc attctcagga ggatagcgtt accgaacatc gtggcaacag 4200

aagattgagt tttcattcgc acagaattga agaagttccc aaaacagggc tgggctcctc 4260

ggcaggttta gtcacagttt taactacagc tttggcctcc ttttttgtat cggacctgga 4320

aaataatgta gacaaatata gagaagttat tcataattta gcacaagttg ctcattgtca 4380

agctcagggt aaaattggaa gcgggtttga tgtagcggcg gcagcatatg gatctatcag 4440

atatagaaga ttcccacccg cattaatctc taatttgcca gatattggaa gtgctactta 4500

cggcagtaaa ctggcgcatt tggttgatga agaagactgg aatattacga ttaaaagtaa 4560

ccatttacct tcgggattaa ctttatggat gggcgatatt aagaatggtt cagaaacagt 4620

aaaactggtc cagaaggtaa aaaattggta tgattcgcat atgccagaaa gcttgaaaat 4680

atatacagaa ctcgatcatg caaattctag atttatggat ggactatcta aactagatcg 4740

cttacacgag actcatgacg attacagcga tcagatattt gagtctcttg agaggaatga 4800

ctgtacctgt caaaagtatc ctgaaatcac agaagttaga gatgcagttg ccacaattag 4860

acgttccttt agaaaaataa ctaaagaatc tggtgccgat atcgaacctc ccgtacaaac 4920

tagcttattg gatgattgcc agaccttaaa aggagttctt acttgcttaa tacctggtgc 4980

tggtggttat gacgccattg cagtgattac taagcaagat gttgatctta gggctcaaac 5040

cgctaatgac aaaagatttt ctaaggttca atggctggat gtaactcagg ctgactgggg 5100

tgttaggaaa gaaaaagatc cggaaactta tcttgataaa ctgcaggagg agttttaatg 5160

tcattaccgt tcttaacttc tgcaccggga aaggttatta tttttggtga acactctgct 5220

gtgtacaaca agcctgccgt cgctgctagt gtgtctgcgt tgagaaccta cctgctaata 5280

agcgagtcat ctgcaccaga tactattgaa ttggacttcc cggacattag ctttaatcat 5340

aagtggtcca tcaatgattt caatgccatc accgaggatc aagtaaactc ccaaaaattg 5400

gccaaggctc aacaagccac cgatggcttg tctcaggaac tcgttagtct tttggatccg 5460

ttgttagctc aactatccga atccttccac taccatgcag cgttttgttt cctgtatatg 5520

tttgtttgcc tatgccccca tgccaagaat attaagtttt ctttaaagtc tactttaccc 5580

atcggtgctg ggttgggctc aagcgcctct atttctgtat cactggcctt agctatggcc 5640

tacttggggg ggttaatagg atctaatgac ttggaaaagc tgtcagaaaa cgataagcat 5700

atagtgaatc aatgggcctt cataggtgaa aagtgtattc acggtacccc ttcaggaata 5760

gataacgctg tggccactta tggtaatgcc ctgctatttg aaaaagactc acataatgga 5820

acaataaaca caaacaattt taagttctta gatgatttcc cagccattcc aatgatccta 5880

acctatacta gaattccaag gtctacaaaa gatcttgttg ctcgcgttcg tgtgttggtc 5940

accgagaaat ttcctgaagt tatgaagcca attctagatg ccatgggtga atgtgcccta 6000

caaggcttag agatcatgac taagttaagt aaatgtaaag gcaccgatga cgaggctgta 6060

gaaactaata atgaactgta tgaacaacta ttggaattga taagaataaa tcatggactg 6120

cttgtctcaa tcggtgtttc tcatcctgga ttagaactta ttaaaaatct gagcgatgat 6180

ttgagaattg gctccacaaa acttaccggt gctggtggcg gcggttgctc tttgactttg 6240

ttacgaagag acattactca agagcaaatt gacagcttca aaaagaaatt gcaagatgat 6300

tttagttacg agacatttga aacagacttg ggtgggactg gctgctgttt gttaagcgca 6360

aaaaatttga ataaagatct taaaatcaaa tccctagtat tccaattatt tgaaaataaa 6420

actaccacaa agcaacaaat tgacgatcta ttattgccag gaaacacgaa tttaccatgg 6480

acttcacagg aggagtttta atgactgtat atactgctag tgtaactgct ccggtaaata 6540

ttgctactct taagtattgg gggaaaaggg acacgaagtt gaatctgccc accaattcgt 6600

ccatatcagt gactttatcg caagatgacc tcagaacgtt gacctctgcg gctactgcac 6660

ctgagtttga acgcgacact ttgtggttaa atggagaacc acacagcatc gacaatgaaa 6720

gaactcaaaa ttgtctgcgc gacctacgcc aattaagaaa ggaaatggaa tcgaaggacg 6780

cctcattgcc cacattatct caatggaaac tccacattgt ctccgaaaat aactttccta 6840

cagcagctgg tttagcttcc tccgctgctg gctttgctgc attggtctct gcaattgcta 6900

agttatacca attaccacag tcaacttcag aaatatctag aatagcaaga aaggggtctg 6960

gttcagcttg tagatcgttg tttggcggat acgtggcctg ggaaatggga aaagctgaag 7020

atggtcatga ttccatggca gtacaaatcg cagacagctc tgactggcct cagatgaaag 7080

cttgtgtcct agttgtcagc gatattaaaa aggatgtgag ttccactcag ggtatgcaat 7140

tgaccgtggc aacctccgaa ctatttaaag aaagaattga acatgtcgta ccaaagagat 7200

ttgaagtcat gcgtaaagcc attgttgaaa aagatttcgc cacctttgca aaggaaacaa 7260

tgatggattc caactctttc catgccacat gtttggactc tttccctcca atattctaca 7320

tgaatgacac ttccaagcgt atcatcagtt ggtgccacac cattaatcag ttttacggag 7380

aaacaatcgt tgcatacacg tttgatgcag gtccaaatgc tgtgttgtac tacttagctg 7440

aaaatgagtc gaaactcttt gcatttatct ataaattgtt tggctctgtt cctggatggg 7500

acaagaaatt tactactgag cagcttgagg ctttcaacca tcaatttgaa tcatctaact 7560

ttactgcacg tgaattggat cttgagttgc aaaaggatgt tgccagagtg attttaactc 7620

aagtcggttc aggcccacaa gaaacaaacg aatctttgat tgacgcaaag actggtctac 7680

caaaggaata act 7693

<210> 59

<211> 7695

<212> DNA

<213> Artificial Sequence

<220>

<223> Operon B containing A. thaliana and S. cerevisiae DNA

<400> 59

ggccgcagga ggagttcata tgtcagagtt gagagccttc agtgccccag ggaaagcgtt 60

actagctggt ggatatttag ttttagatac aaaatatgaa gcatttgtag tcggattatc 120

ggcaagaatg catgctgtag cccatcctta cggttcattg caagggtctg ataagtttga 180

agtgcgtgtg aaaagtaaac aatttaaaga tggggagtgg ctgtaccata taagtcctaa 240

aagtggcttc attcctgttt cgataggcgg atctaagaac cctttcattg aaaaagttat 300

cgctaacgta tttagctact ttaaacctaa catggacgac tactgcaata gaaacttgtt 360

cgttattgat attttctctg atgatgccta ccattctcag gaggatagcg ttaccgaaca 420

tcgtggcaac agaagattga gttttcattc gcacagaatt gaagaagttc ccaaaacagg 480

gctgggctcc tcggcaggtt tagtcacagt tttaactaca gctttggcct ccttttttgt 540

atcggacctg gaaaataatg tagacaaata tagagaagtt attcataatt tagcacaagt 600

tgctcattgt caagctcagg gtaaaattgg aagcgggttt gatgtagcgg cggcagcata 660

tggatctatc agatatagaa gattcccacc cgcattaatc tctaatttgc cagatattgg 720

aagtgctact tacggcagta aactggcgca tttggttgat gaagaagact ggaatattac 780

gattaaaagt aaccatttac cttcgggatt aactttatgg atgggcgata ttaagaatgg 840

ttcagaaaca gtaaaactgg tccagaaggt aaaaaattgg tatgattcgc atatgccaga 900

aagcttgaaa atatatacag aactcgatca tgcaaattct agatttatgg atggactatc 960

taaactagat cgcttacacg agactcatga cgattacagc gatcagatat ttgagtctct 1020

tgagaggaat gactgtacct gtcaaaagta tcctgaaatc acagaagtta gagatgcagt 1080

tgccacaatt agacgttcct ttagaaaaat aactaaagaa tctggtgccg atatcgaacc 1140

tcccgtacaa actagcttat tggatgattg ccagacctta aaaggagttc ttacttgctt 1200

aatacctggt gctggtggtt atgacgccat tgcagtgatt actaagcaag atgttgatct 1260

tagggctcaa accgctaatg acaaaagatt ttctaaggtt caatggctgg atgtaactca 1320

ggctgactgg ggtgttagga aagaaaaaga tccggaaact tatcttgata aactgcagga 1380

ggagttttaa tgtcattacc gttcttaact tctgcaccgg gaaaggttat tattttggt 1440

gaacactctg ctgtgtacaa caagcctgcc gtcgctgcta gtgtgtctgc gttgagaacc 1500

tacctgctaa taagcgagtc atctgcacca gatactattg aattggactt cccggacatt 1560

agctttaatc ataagtggtc catcaatgat ttcaatgcca tcaccgagga tcaagtaaac 1620

tcccaaaaat tggccaaggc tcaacaagcc accgatggct tgtctcagga actcgttagt 1680

cttttggatc cgttgttagc tcaactatcc gaatccttcc actaccatgc agcgttttgt 1740

ttcctgtata tgtttgtttg cctatgcccc catgccaaga atattaagtt ttctttaaag 1800

tctactttac ccatcggtgc tgggttgggc tcaagcgcct ctatttctgt atcactggcc 1860

ttagctatgg cctacttggg ggggttaata ggatctaatg acttggaaaa gctgtcagaa 1920

aacgataagc atatagtgaa tcaatgggcc ttcataggtg aaaagtgtat tcacggtacc 1980

ccttcaggaa tagataacgc tgtggccact tatggtaatg ccctgctatt tgaaaaagac 2040

tcacataatg gaacaataaa cacaaacaat tttaagttct tagatgattt cccagccatt 2100

ccaatgatcc taacctatac tagaattcca aggtctacaa aagatcttgt tgctcgcgtt 2160

cgtgtgttgg tcaccgagaa atttcctgaa gttatgaagc caattctaga tgccatgggt 2220

gaatgtgccc tacaaggctt agagatcatg actaagttaa gtaaatgtaa aggcaccgat 2280

gacgaggctg tagaaactaa taatgaactg tatgaacaac tattggaatt gataagaata 2340

aatcatggac tgcttgtctc aatcggtgtt tctcatcctg gattagaact tattaaaaat 2400

ctgagcgatg atttgagaat tggctccaca aaacttaccg gtgctggtgg cggcggttgc 2460

tctttgactt tgttacgaag agacattact caagagcaaa ttgacagctt caaaaagaaa 2520

ttgcaagatg attttagtta cgagacattt gaaacagact tgggtgggac tggctgctgt 2580

ttgttaagcg caaaaaattt gaataaagat cttaaaatca aatccctagt attccaatta 2640

tttgaaaata aaactaccac aaagcaacaa attgacgatc tattattgcc aggaaacacg 2700

aatttaccat ggacttcaga cgaggagttt taatgactgt atatactgct agtgtaactg 2760

ctccggtaaa tattgctact cttaagtatt gggggaaaag ggacacgaag ttgaatctgc 2820

ccaccaattc gtccatatca gtgactttat cgcaagatga cctcagaacg ttgacctctg 2880

cggctactgc acctgagttt gaacgcgaca ctttgtggtt aaatggagaa ccacacagca 2940

tcgacaatga aagaactcaa aattgtctgc gcgacctacg ccaattaaga aaggaaatgg 3000

aatcgaagga cgcctcattg cccacattat ctcaatggaa actccacatt gtctccgaaa 3060

ataactttcc tacagcagct ggtttagctt cctccgctgc tggctttgct gcattggtct 3120

ctgcaattgc taagttatac caattaccac agtcaacttc agaaatatct agaatagcaa 3180

gaaaggggtc tggttcagct tgtagatcgt tgtttggcgg atacgtggcc tgggaaatgg 3240

gaaaagctga agatggtcat gattccatgg cagtacaaat cgcagacagc tctgactggc 3300

ctcagatgaa agcttgtgtc ctagttgtca gcgatattaa aaaggatgtg agttccactc 3360

agggtatgca attgaccgtg gcaacctccg aactatttaa agaaagaatt gaacatgtcg 3420

taccaaagag atttgaagtc atgcgtaaag ccattgttga aaaagatttc gccacctttg 3480

caaaggaaac aatgatggat tccaactctt tccatgccac atgtttggac tctttccctc 3540

caatattcta catgaatgac acttccaagc gtatcatcag ttggtgccac accattaatc 3600

agttttacgg agaaacaatc gttgcataca cgtttgatgc aggtccaaat gctgtgttgt 3660

actacttagc tgaaaatgag tcgaaactct ttgcatttat ctataaattg tttggctctg 3720

ttcctggatg ggacaagaaa tttactactg agcagcttga ggctttcaac catcaatttg 3780

aatcatctaa ctttactgca cgtgaattgg atcttgagtt gcaaaaggat gttgccagag 3840

tgattttaac tcaagtcggt tcaggcccac aagaaacaaa cgaatctttg attgacgcaa 3900

agactggtct accaaaggaa gaggagtttt aactcgacgc cggcggaggc acatatgtct 3960

cagaacgttt acattgtatc gactgccaga accccaattg gttcattcca gggttctcta 4020

tcctccaaga cagcagtgga attgggtgct gttgctttaa aaggcgcctt ggctaaggtt 4080

ccagaattgg atgcatccaa ggattttgac gaaattattt ttggtaacgt tctttctgcc 4140

aatttgggcc aagctccggc cagacaagtt gctttggctg ccggtttgag taatcatatc 4200

gttgcaagca cagttaacaa ggtctgtgca tccgctatga aggcaatcat tttgggtgct 4260

caatccatca aatgtggtaa tgctgatgtt gtcgtagctg gtggttgtga atctatgact 4320

aacgcaccat actacatgcc agcagcccgt gcgggtgcca aatttggcca aactgttctt 4380

gttgatggtg tcgaaagaga tgggttgaac gatgcgtacg atggtctagc catgggtgta 4440

cacgcagaaa agtgtgcccg tgattgggat attactagag aacaacaaga caattttgcc 4500

atcgaatcct accaaaaatc tcaaaaatct caaaaggaag gtaaattcga caatgaaatt 4560

gtacctgtta ccattaaggg atttagaggt aagcctgata ctcaagtcac gaaggacgag 4620

gaacctgcta gattacacgt tgaaaaattg agatctgcaa ggactgtttt ccaaaaagaa 4680

aacggtactg ttactgccgc taacgcttct ccaatcaacg atggtgctgc agccgtcatc 4740

ttggtttccg aaaaagtttt gaaggaaaag aatttgaagc ctttggctat tatcaaaggt 4800

tggggtgagg ccgctcatca accagctgat tttacatggg ctccatctct tgcagttcca 4860

aaggctttga aacatgctgg catcgaagac atcaattctg ttgattactt tgaattcaat 4920

gaagcctttt cggttgtcgg tttggtgaac actaagattt tgaagctaga cccatctaag 4980

gttaatgtat atggtggtgc tgttgctcta ggtcacccat tgggttgttc tggtgctaga 5040

gtggttgtta cactgctatc catcttacag caagaaggag gtaagatcgg tgttgccgcc 5100

atttgtaatg gtggtggtgg tgcttcctct attgtcattg aaaagatatg aggatcctct 5160

agatgcgcag gaggcacata tggcgaagaa cgttgggatt ttggctatgg atatctattt 5220

ccctcccacc tgtgttcaac aggaagcttt ggaagcacat gatggagcaa gtaaagggaa 5280

atacactatt ggacttggcc aagattgttt agctttttgc actgagcttg aagatgttat 5340

ctctatgagt ttcaatgcgg tgacatcact ttttgagaag tataagattg accctaacca 5400

aatcgggcgt cttgaagtag gaagtgagac tgttattgac aaaagcaagt ccatcaagac 5460

cttcttgatg cagctctttg agaaatgtgg aaacactgat gtcgaaggtg ttgactcgac 5520

caatgcttgc tatggtggaa ctgcagcttt gttaaactgt gtcaattggg ttgagagtaa 5580

ctcttgggat ggacgttatg gcctcgtcat ttgtactgac agcgcggttt atgcagaagg 5640

acccgcaagg cccactggag gagctgcagc gattgctatg ttgataggac ctgatgctcc 5700

tatcgttttc gaaagcaaat tgagagcaag ccacatggct catgtctatg acttttacaa 5760

gcccaatctt gctagcgagt acccggttgt tgatggtaag ctttcacaga cttgctacct 5820

catggctctt gactcctgct ataaacattt atgcaacaag ttcgagaaga tcgagggcaa 5880

agagttctcc ataaatgatg ctgattacat tgttttccat tctccataca ataaacttgt 5940

acagaaaagc tttgctcgtc tcttgtacaa cgacttcttg agaaacgcaa gctccattga 6000

cgaggctgcc aaagaaaagt tcacccctta ttcatctttg acccttgacg agagttacca 6060

aagccgtgat cttgaaaagg tgtcacaaca aatttcgaaa ccgttttatg atgctaaagt 6120

gcaaccaacg actttaatac caaaggaagt cggtaacatg tacactgctt ctctctacgc 6180

tgcatttgct tccctcatcc acaataaaca caatgatttg gcgggaaagc gggtggttat 6240

gttctcttat ggaagtggct ccaccgcaac aatgttctca ttacgcctca acgacaataa 6300

gcctcctttc agcatttcaa acattgcatc tgtaatggat gttggcggta aattgaaagc 6360

tagacatgag tatgcacctg agaagtttgt ggagacaatg aagctaatgg aacataggta 6420

tggagcaaag gactttgtga caaccaagga gggtattata gatcttttgg caccgggaac 6480

ttattatctg aaagaggttg attccttgta ccggagattc tatggcaaga aaggtgaaga 6540

tggatctgta gccaatggac actgaggatc cgtcgagcac gtggaggcac atatgcaatg 6600

ctgtgagatg cctgttggat acattcagat tcctgttggg attgctggtc cattgttgct 6660

tgatggttat gagtactctg ttcctatggc tacaaccgaa ggttgtttgg ttgctagcac 6720

taacagaggc tgcaaggcta tgtttatctc tggtggcgcc accagtaccg ttcttaagga 6780

cggtatgacc cgagcacctg ttgttcggtt cgcttcggcg agacgagctt cggagcttaa 6840

gtttttcttg gagaatccag agaactttga tactttggca gtagtcttca acaggtcgag 6900

tagatttgca agactgcaaa gtgttaaatg cacaatcgcg gggaagaatg cttatgtaag 6960

gttctgttgt agtactggtg atgctatggg gatgaatatg gtttctaaag gtgtgcagaa 7020

tgttcttgag tatcttaccg atgatttccc tgacatggat gtgattggaa tctctggtaa 7080

cttctgttcg gacaagaaac ctgctgctgt gaactggatt gagggacgtg gtaaatcagt 7140

tgtttgcgag gctgtaatca gaggagagat cgtgaacaag gtcttgaaaa cgagcgtggc 7200

tgctttagtc gagctcaaca tgctcaagaa cctagctggc tctgctgttg caggctctct 7260

aggtggattc aacgctcatg ccagtaacat agtgtctgct gtattcatag ctactggcca 7320

agatccagct caaaacgtgg agagttctca atgcatcacc atgatggaag ctattaatga 7380

cggcaaagat atccatatct cagtcactat gccatctatc gaggtgggga cagtgggagg 7440

aggaacacag cttgcatctc aatcagcgtg tttaaacctg ctcggagtta aaggagcaag 7500

cacagagtcg ccgggaatga acgcaaggag gctagcgacg atcgtagccg gagcagtttt 7560

agctggagag ttatctttaa tgtcagcaat tgcagctgga cagcttgtga gaagtcacat 7620

gaaatacaat agatccagcc gagacatctc tggagcaacg acaacgacaa caacaacaac 7680

atgacccggg atccg 7695

<210> 60

<211> 8235

<212> DNA

<213> Artificial Sequence

<220>

<223> Operon C containing A. thaliana, S. cerevisiae, and R. caosulatus DNA

<400> 60

ggccgcagga ggagttcata tgtcagagtt gagagccttc agtgccccag ggaaagcgtt 60

actagctggt ggatatttag ttttagatac aaaatatgaa gcatttgtag tcggattatc 120

ggcaagaatg catgctgtag cccatcctta cggttcattg caagggtctg ataagtttga 180

agtgcgtgtg aaaagtaaac aatttaaaga tggggagtgg ctgtaccata taagtcctaa 240

aagtggcttc attcctgttt cgataggcgg atctaagaac cctttcattg aaaaagttat 300

cgctaacgta tttagctact ttaaacctaa catggacgac tactgcaata gaaacttgtt 360

cgttattgat attttctctg atgatgccta ccattctcag gaggatagcg ttaccgaaca 420

tcgtggcaac agaagattga gttttcattc gcacagaatt gaagaagttc ccaaaacagg 480

gctgggctcc tcggcaggtt tagtcacagt tttaactaca gctttggcct ccttttttgt 540

atcggacctg gaaaataatg tagacaaata tagagaagtt attcataatt tagcacaagt 600

tgctcattgt caagctcagg gtaaaattgg aagcgggttt gatgtagcgg cggcagcata 660

tggatctatc agatatagaa gattcccacc cgcattaatc tctaatttgc cagatattgg 720

aagtgctact tacggcagta aactggcgca tttggttgat gaagaagact ggaatattac 780

gattaaaagt aaccatttac cttcgggatt aactttatgg atgggcgata ttaagaatgg 840

ttcagaaaca gtaaaactgg tccagaaggt aaaaaattgg tatgattcgc atatgccaga 900

aagcttgaaa atatatacag aactcgatca tgcaaattct agatttatgg atggactatc 960

taaactagat cgcttacacg agactcatga cgattacagc gatcagatat ttgagtctct 1020

tgagaggaat gactgtacct gtcaaaagta tcctgaaatc acagaagtta gagatgcagt 1080

tgccacaatt agacgttcct ttagaaaaat aactaaagaa tctggtgccg atatcgaacc 1140

tcccgtacaa actagcttat tggatgattg ccagacctta aaaggagttc ttacttgctt 1200

aatacctggt gctggtggtt atgacgccat tgcagtgatt actaagcaag atgttgatct 1260

tagggctcaa accgctaatg acaaaagatt ttctaaggtt caatggctgg atgtaactca 1320

ggctgactgg ggtgttagga aagaaaaaga tccggaaact tatcttgata aactgcagga 1380

ggagttttaa tgtcattacc gttcttaact tctgcaccgg gaaaggttat tattttggt 1440

gaacactctg ctgtgtacaa caagcctgcc gtcgctgcta gtgtgtctgc gttgagaacc 1500

tacctgctaa taagcgagtc atctgcacca gatactattg aattggactt cccggacatt 1560

agctttaatc ataagtggtc catcaatgat ttcaatgcca tcaccgagga tcaagtaaac 1620

tcccaaaaat tggccaaggc tcaacaagcc accgatggct tgtctcagga actcgttagt 1680

cttttggatc cgttgttagc tcaactatcc gaatccttcc actaccatgc agcgttttgt 1740

ttcctgtata tgtttgtttg cctatgcccc catgccaaga atattaagtt ttctttaaag 1800

tctactttac ccatcggtgc tgggttgggc tcaagcgcct ctatttctgt atcactggcc 1860

ttagctatgg cctacttggg ggggttaata ggatctaatg acttggaaaa gctgtcagaa 1920

aacgataagc atatagtgaa tcaatgggcc ttcataggtg aaaagtgtat tcacggtacc 1980

ccttcaggaa tagataacgc tgtggccact tatggtaatg ccctgctatt tgaaaaagac 2040

tcacataatg gaacaataaa cacaaacaat tttaagttct tagatgattt cccagccatt 2100

ccaatgatcc taacctatac tagaattcca aggtctacaa aagatcttgt tgctcgcgtt 2160

cgtgtgttgg tcaccgagaa atttcctgaa gttatgaagc caattctaga tgccatgggt 2220

gaatgtgccc tacaaggctt agagatcatg actaagttaa gtaaatgtaa aggcaccgat 2280

gacgaggctg tagaaactaa taatgaactg tatgaacaac tattggaatt gataagaata 2340

aatcatggac tgcttgtctc aatcggtgtt tctcatcctg gattagaact tattaaaaat 2400

ctgagcgatg atttgagaat tggctccaca aaacttaccg gtgctggtgg cggcggttgc 2460

tctttgactt tgttacgaag agacattact caagagcaaa ttgacagctt caaaaagaaa 2520

ttgcaagatg attttagtta cgagacattt gaaacagact tgggtgggac tggctgctgt 2580

ttgttaagcg caaaaaattt gaataaagat cttaaaatca aatccctagt attccaatta 2640

tttgaaaata aaactaccac aaagcaacaa attgacgatc tattattgcc aggaaacacg 2700

aatttaccat ggacttcaga cgaggagttt taatgactgt atatactgct agtgtaactg 2760

ctccggtaaa tattgctact cttaagtatt gggggaaaag ggacacgaag ttgaatctgc 2820

ccaccaattc gtccatatca gtgactttat cgcaagatga cctcagaacg ttgacctctg 2880

cggctactgc acctgagttt gaacgcgaca ctttgtggtt aaatggagaa ccacacagca 2940

tcgacaatga aagaactcaa aattgtctgc gcgacctacg ccaattaaga aaggaaatgg 3000

aatcgaagga cgcctcattg cccacattat ctcaatggaa actccacatt gtctccgaaa 3060

ataactttcc tacagcagct ggtttagctt cctccgctgc tggctttgct gcattggtct 3120

ctgcaattgc taagttatac caattaccac agtcaacttc agaaatatct agaatagcaa 3180

gaaaggggtc tggttcagct tgtagatcgt tgtttggcgg atacgtggcc tgggaaatgg 3240

gaaaagctga agatggtcat gattccatgg cagtacaaat cgcagacagc tctgactggc 3300

ctcagatgaa agcttgtgtc ctagttgtca gcgatattaa aaaggatgtg agttccactc 3360

agggtatgca attgaccgtg gcaacctccg aactatttaa agaaagaatt gaacatgtcg 3420

taccaaagag atttgaagtc atgcgtaaag ccattgttga aaaagatttc gccacctttg 3480

caaaggaaac aatgatggat tccaactctt tccatgccac atgtttggac tctttccctc 3540

caatattcta catgaatgac acttccaagc gtatcatcag ttggtgccac accattaatc 3600

agttttacgg agaaacaatc gttgcataca cgtttgatgc aggtccaaat gctgtgttgt 3660

actacttagc tgaaaatgag tcgaaactct ttgcatttat ctataaattg tttggctctg 3720

ttcctggatg ggacaagaaa tttactactg agcagcttga ggctttcaac catcaatttg 3780

aatcatctaa ctttactgca cgtgaattgg atcttgagtt gcaaaaggat gttgccagag 3840

tgattttaac tcaagtcggt tcaggcccac aagaaacaaa cgaatctttg attgacgcaa 3900

agactggtct accaaaggaa gaggagtttt aactcgacgc cggcggaggc acatatgtct 3960

cagaacgttt acattgtatc gactgccaga accccaattg gttcattcca gggttctcta 4020

tcctccaaga cagcagtgga attgggtgct gttgctttaa aaggcgcctt ggctaaggtt 4080

ccagaattgg atgcatccaa ggattttgac gaaattattt ttggtaacgt tctttctgcc 4140

aatttgggcc aagctccggc cagacaagtt gctttggctg ccggtttgag taatcatatc 4200

gttgcaagca cagttaacaa ggtctgtgca tccgctatga aggcaatcat tttgggtgct 4260

caatccatca aatgtggtaa tgctgatgtt gtcgtagctg gtggttgtga atctatgact 4320

aacgcaccat actacatgcc agcagcccgt gcgggtgcca aatttggcca aactgttctt 4380

gttgatggtg tcgaaagaga tgggttgaac gatgcgtacg atggtctagc catgggtgta 4440

cacgcagaaa agtgtgcccg tgattgggat attactagag aacaacaaga caattttgcc 4500

atcgaatcct accaaaaatc tcaaaaatct caaaaggaag gtaaattcga caatgaaatt 4560

gtacctgtta ccattaaggg atttagaggt aagcctgata ctcaagtcac gaaggacgag 4620

gaacctgcta gattacacgt tgaaaaattg agatctgcaa ggactgtttt ccaaaaagaa 4680

aacggtactg ttactgccgc taacgcttct ccaatcaacg atggtgctgc agccgtcatc 4740

ttggtttccg aaaaagtttt gaaggaaaag aatttgaagc ctttggctat tatcaaaggt 4800

tggggtgagg ccgctcatca accagctgat tttacatggg ctccatctct tgcagttcca 4860

aaggctttga aacatgctgg catcgaagac atcaattctg ttgattactt tgaattcaat 4920

gaagcctttt cggttgtcgg tttggtgaac actaagattt tgaagctaga cccatctaag 4980

gttaatgtat atggtggtgc tgttgctcta ggtcacccat tgggttgttc tggtgctaga 5040

gtggttgtta cactgctatc catcttacag caagaaggag gtaagatcgg tgttgccgcc 5100

atttgtaatg gtggtggtgg tgcttcctct attgtcattg aaaagatatg aggatcctct 5160

agatgcgcag gaggcacata tggcgaagaa cgttgggatt ttggctatgg atatctattt 5220

ccctcccacc tgtgttcaac aggaagcttt ggaagcacat gatggagcaa gtaaagggaa 5280

atacactatt ggacttggcc aagattgttt agctttttgc actgagcttg aagatgttat 5340

ctctatgagt ttcaatgcgg tgacatcact ttttgagaag tataagattg accctaacca 5400

aatcgggcgt cttgaagtag gaagtgagac tgttattgac aaaagcaagt ccatcaagac 5460

cttcttgatg cagctctttg agaaatgtgg aaacactgat gtcgaaggtg ttgactcgac 5520

caatgcttgc tatggtggaa ctgcagcttt gttaaactgt gtcaattggg ttgagagtaa 5580

ctcttgggat ggacgttatg gcctcgtcat ttgtactgac agcgcggttt atgcagaagg 5640

acccgcaagg cccactggag gagctgcagc gattgctatg ttgataggac ctgatgctcc 5700

tatcgttttc gaaagcaaat tgagagcaag ccacatggct catgtctatg acttttacaa 5760

gcccaatctt gctagcgagt acccggttgt tgatggtaag ctttcacaga cttgctacct 5820

catggctctt gactcctgct ataaacattt atgcaacaag ttcgagaaga tcgagggcaa 5880

agagttctcc ataaatgatg ctgattacat tgttttccat tctccataca ataaacttgt 5940

acagaaaagc tttgctcgtc tcttgtacaa cgacttcttg agaaacgcaa gctccattga 6000

cgaggctgcc aaagaaaagt tcacccctta ttcatctttg acccttgacg agagttacca 6060

aagccgtgat cttgaaaagg tgtcacaaca aatttcgaaa ccgttttatg atgctaaagt 6120

gcaaccaacg actttaatac caaaggaagt cggtaacatg tacactgctt ctctctacgc 6180

tgcatttgct tccctcatcc acaataaaca caatgatttg gcgggaaagc gggtggttat 6240

gttctcttat ggaagtggct ccaccgcaac aatgttctca ttacgcctca acgacaataa 6300

gcctcctttc agcatttcaa acattgcatc tgtaatggat gttggcggta aattgaaagc 6360

tagacatgag tatgcacctg agaagtttgt ggagacaatg aagctaatgg aacataggta 6420

tggagcaaag gactttgtga caaccaagga gggtattata gatcttttgg caccgggaac 6480

ttattatctg aaagaggttg attccttgta ccggagattc tatggcaaga aaggtgaaga 6540

tggatctgta gccaatggac actgaggatc cgtcgagcac gtggaggcac atatgcaatg 6600

ctgtgagatg cctgttggat acattcagat tcctgttggg attgctggtc cattgttgct 6660

tgatggttat gagtactctg ttcctatggc tacaaccgaa ggttgtttgg ttgctagcac 6720

taacagaggc tgcaaggcta tgtttatctc tggtggcgcc accagtaccg ttcttaagga 6780

cggtatgacc cgagcacctg ttgttcggtt cgcttcggcg agacgagctt cggagcttaa 6840

gtttttcttg gagaatccag agaactttga tactttggca gtagtcttca acaggtcgag 6900

tagatttgca agactgcaaa gtgttaaatg cacaatcgcg gggaagaatg cttatgtaag 6960

gttctgttgt agtactggtg atgctatggg gatgaatatg gtttctaaag gtgtgcagaa 7020

tgttcttgag tatcttaccg atgatttccc tgacatggat gtgattggaa tctctggtaa 7080

cttctgttcg gacaagaaac ctgctgctgt gaactggatt gagggacgtg gtaaatcagt 7140

tgtttgcgag gctgtaatca gaggagagat cgtgaacaag gtcttgaaaa cgagcgtggc 7200

tgctttagtc gagctcaaca tgctcaagaa cctagctggc tctgctgttg caggctctct 7260

aggtggattc aacgctcatg ccagtaacat agtgtctgct gtattcatag ctactggcca 7320

agatccagct caaaacgtgg agagttctca atgcatcacc atgatggaag ctattaatga 7380

cggcaaagat atccatatct cagtcactat gccatctatc gaggtgggga cagtgggagg 7440

aggaacacag cttgcatctc aatcagcgtg tttaaacctg ctcggagtta aaggagcaag 7500

cacagagtcg ccgggaatga acgcaaggag gctagcgacg atcgtagccg gagcagtttt 7560

agctggagag ttatctttaa tgtcagcaat tgcagctgga cagcttgtga gaagtcacat 7620

gaaatacaat agatccagcc gagacatctc tggagcaacg acaacgacaa caacaacaac 7680

atgacccgta aggaggcaca tatgagtgag cttatacccg cctgggttgg tgacagactg 7740

gctccggtgg acaagttgga ggtgcatttg aaagggctcc gccacaaggc ggtgtctgtt 7800

ttcgtcatgg atggcgaaaa cgtgctgatc cagcgccgct cggaggagaa atatcactct 7860

cccgggcttt gggcgaacac ctgctgcacc catccgggct ggaccgaacg ccccgaggaa 7920

tgcgcggtgc ggcggctgcg cgaggagctg gggatcaccg ggctttatcc cgcccatgcc 7980

gaccggctgg aatatcgcgc cgatgtcggc ggcggcatga tcgagcatga ggtggtcgac 8040

atctatctgg cctatgccaa accgcatatg cggatcaccc ccgatccgcg cgaagtggcc 8100

gaggtgcgct ggatcggcct ttacgatctg gcggccgagg ccggtcggca tcccgagcgg 8160

ttctcgaaat ggctcaacat ctatctgtcg agccatcttg accggatttt cggatcgatc 8220

ctgcgcggct gagcg 8235

<210> 61

<211> 7681

<212> DNA

<213> Artificial Sequence

<220>

<223> Operon C containing A. thaliana, S. cerevisiae, and Streptomyces sp CL190
DNA, and R. capsulatus DNA

<400> 61
ggccgcgtcg actacggccg caggaggagt tcatatgtca gagttgagag ccttcagtgc 60

cccagggaaa gcgttactag ctggtggata tttagtttta gatacaaaat atgaagcatt 120

tgtagtcgga ttatcggcaa gaatgcatgc tgtagcccat ccttacggtt cattgcaagg 180

gtctgataag tttgaagtgc gtgtgaaaag taaacaattt aaagatgggg agtggctgta 240

ccatataagt cctaaaagtg gcttcattcc tgtttcgata ggcggatcta agaacccttt 300

cattgaaaaa gttatcgcta acgtatttag ctactttaaa cctaacatgg acgactactg 360

caatagaaac ttgttcgtta ttgatatttt ctctgatgat gcctaccatt ctcaggagga 420

tagcgttacc gaacatcgtg gcaacagaag attgagtttt cattcgcaca gaattgaaga 480

agttcccaaa acagggctgg gctcctcggc aggtttagtc acagttttaa ctacagcttt 540

ggcctccttt tttgtatcgg acctggaaaa taatgtagac aaatatagag aagttattca 600

taatttagca caagttgctc attgtcaagc tcagggtaaa attggaagcg ggtttgatgt 660

agcggcggca gcatatggat ctatcagata tagaagattc ccacccgcat taatctctaa 720

tttgccagat attggaagtg ctacttacgg cagtaaactg gcgcatttgg ttgatgaaga 780

agactggaat attacgatta aaagtaacca tttaccttcg ggattaactt tatggatggg 840

cgatattaag aatggttcag aaacagtaaa actggtccag aaggtaaaaa attggtatga 900

ttcgcatatg ccagaaagct tgaaaatata tacagaactc gatcatgcaa attctagatt 960

tatggatgga ctatctaaac tagatcgctt acacgagact catgacgatt acagcgatca 1020

gatatttgag tctcttgaga ggaatgactg tacctgtcaa aagtatcctg aaatcacaga 1080

agttagagat gcagttgcca caattagacg ttcctttaga aaaataacta aagaatctgg 1140

tgccgatatc gaacctcccg tacaaactag cttattggat gattgccaga ccttaaaagg 1200

agttcttact tgcttaatac ctggtgctgg tggttatgac gccattgcag tgattactaa 1260

gcaagatgtt gatcttaggg ctcaaaccgc taatgacaaa agattttcta aggttcaatg 1320

gctggatgta actcaggctg actggggtgt taggaaagaa aaagatccgg aaacttatct 1380

tgataaactg caggaggagt tttaatgtca ttaccgttct taacttctgc accgggaaag 1440

gttattattt ttggtgaaca ctctgctgtg tacaacaagc ctgccgtcgc tgctagtgtg 1500

tctgcgttga gaacctacct gctaataagc gagtcatctg caccagatac tattgaattg 1560

gacttcccgg acattagctt taatcataag tggtccatca atgatttcaa tgccatcacc 1620

gaggatcaag taaactccca aaaattggcc aaggctcaac aagccaccga tggcttgtct 1680

caggaactcg ttagtctttt ggatccgttg ttagctcaac tatccgaatc cttccactac 1740

catgcagcgt tttgtttcct gtatatgttt gtttgcctat gcccccatgc caagaatatt 1800

aagttttctt taaagtctac tttacccatc ggtgctgggt tgggctcaag cgcctctatt 1860

tctgtatcac tggccttagc tatggcctac ttgggggggt taataggatc taatgacttg 1920

gaaaagctgt cagaaaacga taagcatata gtgaatcaat gggccttcat aggtgaaaag 1980

tgtattcacg gtacccccttc aggaatagat aacgctgtgg ccacttatgg taatgccctg 2040

ctatttgaaa aagactcaca taatggaaca ataaacacaa acaatttaa gttcttagat 2100

gatttcccag ccattccaat gatcctaacc tatactagaa ttccaaggtc tacaaaagat 2160

cttgttgctc gcgttcgtgt gttggtcacc gagaaatttc ctgaagttat gaagccaatt 2220

ctagatgcca tgggtgaatg tgccctacaa ggcttagaga tcatgactaa gttaagtaaa 2280

tgtaaaggca ccgatgacga ggctgtagaa actaataatg aactgtatga acaactattg 2340

gaattgataa gaataaatca tggactgctt gtctcaatcg gtgtttctca tcctggatta 2400

gaacttatta aaaatctgag cgatgatttg agaattggct ccacaaaact taccggtgct 2460

ggtggcggcg gttgctcttt gactttgtta cgaagagaca ttactcaaga gcaaattgac 2520

agcttcaaaa agaaattgca agatgatttt agttacgaga catttgaaac agacttgggt 2580

gggactggct gctgtttgtt aagcgcaaaa aatttgaata aagatcttaa aatcaaatcc 2640

ctagtattcc aattatttga aaataaaact accacaaagc aacaaattga cgatctatta 2700

ttgccaggaa acacgaattt accatggact tcagacgagg agttttaatg actgtatata 2760

ctgctagtgt aactgctccg gtaaatattg ctactcttaa gtattggggg aaaagggaca 2820

cgaagttgaa tctgcccacc aattcgtcca tatcagtgac tttatcgcaa gatgacctca 2880

gaacgttgac ctctgcggct actgcacctg agtttgaacg cgacactttg tggttaaatg 2940

gagaaccaca cagcatcgac aatgaaagaa ctcaaaattg tctgcgcgac ctacgccaat 3000

taagaaagga aatggaatcg aaggacgcct cattgcccac attatctcaa tggaaactcc 3060

acattgtctc cgaaaataac tttcctacag cagctggttt agcttcctcc gctgctggct 3120

ttgctgcatt ggtctctgca attgctaagt tataccaatt accacagtca acttcagaaa 3180

tatctagaat agcaagaaag gggtctggtt cagcttgtag atcgttgttt ggcggatacg 3240

tggcctggga aatgggaaaa gctgaagatg gtcatgattc catggcagta caaatcgcag 3300

acagctctga ctggcctcag atgaaagctt gtgtcctagt tgtcagcgat attaaaaagg 3360

atgtgagttc cactcagggt atgcaattga ccgtggcaac ctccgaacta tttaaagaaa 3420

gaattgaaca tgtcgtacca aagagatttg aagtcatgcg taaagccatt gttgaaaaag 3480

atttcgccac ctttgcaaag gaaacaatga tggattccaa ctctttccat gccacatgtt 3540

tggactcttt ccctccaata ttctacatga atgacacttc caagcgtatc atcagttggt 3600

gccacaccat taatcagttt tacggagaaa caatcgttgc atacacgttt gatgcaggtc 3660

caaatgctgt gttgtactac ttagctgaaa atgagtcgaa actctttgca tttatctata 3720

aattgtttgg ctctgttcct ggatgggaca agaaatttac tactgagcag cttgaggctt 3780

tcaaccatca atttgaatca tctaacttta ctgcacgtga attggatctt gagttgcaaa 3840

aggatgttgc cagagtgatt ttaactcaag tcggttcagg cccacaagaa acaaacgaat 3900

ctttgattga cgcaaagact ggtctaccaa aggaagagga gttttaactc gagtaggagg 3960

cacatatgtc tcagaacgtt tacattgtat cgactgccag aaccccaatt ggttcattcc 4020

agggttctct atcctccaag acagcagtgg aattgggtgc tgttgcttta aaaggcgcct 4080

tggctaaggt tccagaattg gatgcatcca aggattttga cgaaattatt tttggtaacg 4140

ttctttctgc caatttgggc caagctccgg ccagacaagt tgctttggct gccggtttga 4200

gtaatcatat cgttgcaagc acagttaaca aggtctgtgc atccgctatg aaggcaatca 4260

ttttgggtgc tcaatccatc aaatgtggta atgctgatgt tgtcgtagct ggtggttgtg 4320

aatctatgac taacgcacca tactacatgc cagcagcccg tgcgggtgcc aaatttggcc 4380

aaactgttct tgttgatggt gtcgaaagag atgggttgaa cgatgcgtac gatggtctag 4440

ccatgggtgt acacgcagaa aagtgtgccc gtgattggga tattactaga gaacaacaag 4500

acaattttgc catcgaatcc taccaaaaat ctcaaaaatc tcaaaaggaa ggtaaattcg 4560

acaatgaaat tgtacctgtt accattaagg gatttagagg taagcctgat actcaagtca 4620

cgaaggacga ggaacctgct agattacacg ttgaaaaatt gagatctgca aggactgttt 4680

tccaaaaaga aaacggtact gttactgccg ctaacgcttc tccaatcaac gatggtgctg 4740

cagccgtcat cttggtttcc gaaaaagttt tgaaggaaaa gaatttgaag cctttggcta 4800

ttatcaaagg ttggggtgag gccgctcatc aaccagctga ttttacatgg gctccatctc 4860

ttgcagttcc aaaggctttg aaacatgctg gcatcgaaga catcaattct gttgattact 4920

ttgaattcaa tgaagccttt tcggttgtcg gtttggtgaa cactaagatt ttgaagctag 4980

acccatctaa ggttaatgta tatggtggtg ctgttgctct aggtcaccca ttgggttgtt 5040

ctggtgctag agtggttgtt acactgctat ccatcttaca gcaagaagga ggtaagatcg 5100

gtgttgccgc catttgtaat ggtggtggtg gtgcttcctc tattgtcatt gaaaagatat 5160

gaggatcctc tagatgcgca ggaggcacat atggcgaaga acgttgggat tttggctatg 5220

gatatctatt tccctcccac ctgtgttcaa caggaagctt tggaagcaca tgatggagca 5280

agtaaaggga aatacactat tggacttggc caagattgtt tagctttttg cactgagctt 5340

gaagatgtta tctctatgag tttcaatgcg gtgacatcac tttttgagaa gtataagatt 5400

gaccctaacc aaatcgggcg tcttgaagta ggaagtgaga ctgttattga caaaagcaag 5460

tccatcaaga ccttcttgat gcagctcttt gagaaatgtg gaaacactga tgtcgaaggt 5520

gttgactcga ccaatgcttg ctatggtgga actgcagctt tgttaaactg tgtcaattgg 5580

gttgagagta actcttggga tggacgttat ggcctcgtca tttgtactga cagcgcggtt 5640

tatgcagaag gacccgcaag gcccactgga ggagctgcag cgattgctat gttgatagga 5700

cctgatgctc ctatcgtttt cgaaagcaaa ttgagagcaa gccacatggc tcatgtctat 5760

gacttttaca agcccaatct tgctagcgag tacccggttg ttgatggtaa gctttcacag 5820

acttgctacc tcatggctct tgactcctgc tataaacatt tatgcaacaa gttcgagaag 5880

atcgagggca aagagttctc cataaatgat gctgattaca ttgttttcca ttctccatac 5940

aataaacttg tacagaaaag ctttgctcgt ctcttgtaca acgacttctt gagaaacgca 6000

agctccattg acgaggctgc caaagaaaag ttcacccctt attcatcttt gacccttgac 6060

gagagttacc aaagccgtga tcttgaaaag gtgtcacaac aaatttcgaa accgttttat 6120

gatgctaaag tgcaaccaac gactttaata ccaaaggaag tcggtaacat gtacactgct 6180

tctctctacg ctgcatttgc ttccctcatc cacaataaac acaatgattt ggcgggaaag 6240

cgggtggtta tgttctctta tggaagtggc tccaccgcaa caatgttctc attacgcctc 6300

aacgacaata agcctccttt cagcatttca aacattgcat ctgtaatgga tgttggcggt 6360

aaattgaaag ctagacatga gtatgcacct gagaagtttg tggagacaat gaagctaatg 6420

gaacataggt atggagcaaa ggactttgtg acaaccaagg agggtattat agatcttttg 6480

gcaccgggaa cttattatct gaaagaggtt gattccttgt accggagatt ctatggcaag 6540

aaaggtgaag atggatctgt agccaatgga cactgaggat ccgtcgactc gagcacgtga 6600

ggaggcacat atgacggaaa cgcacgccat agccggggtc ccgatgaggt gggtgggacc 6660

ccttcgtatt tccgggaacg tcgccgagac cgagacccag gtcccgctcg ccacgtacga 6720

gtcgccgctg tggccgtcgg tgggccgcgg ggcgaaggtc tcccggctga cggagaaggg 6780

catcgtcgcc accctcgtcg acgagcggat gacccgctcg gtgatcgtcg aggcgacgga 6840

cgcgcagacc gcgtacatgg ccgcgcagac catccacgcc cgcatcgacg agctgcgcga 6900

ggtggtgcgc ggctgcagcc ggttcgccca gctgatcaac atcaagcacg agatcaacgc 6960

gaacctgctg ttcatccggt tcgagttcac caccggtgac gcctccggcc acaacatggc 7020

cacgctcgcc tccgatgtgc tcctggggca cctgctggag acgatccctg gcatctccta 7080

cggctcgatc tccggcaact actgcacgga caagaaggcc accgcgatca acggcatcct 7140

cggccgcggc aagaacgtga tcaccgagct gctggtgccg cgggacgtcg tcgagaacaa 7200

cctgcacacc acggctgcca agatcgtcga gctgaacatc cgcaagaacc tgctcggcac 7260

cctgctcgcc ggcggcatcc gctcggccaa cgcccacttc gcgaacatgc tgctcggctt 7320

ctacctggcc accggccagg acgccgccaa catcgtcgag ggctcgcagg gcgtcgtcat 7380

ggccgaggac cgcgacggcg acctctactt cgcctgcacc ctgccgaacc tgatcgtcgg 7440

cacggtcggc aacggcaagg gtctcggctt cgtggagacg aacctcgccc ggctcggctg 7500

ccgagccgac cgcgaacccg gggagaacgc ccgccgcctc gccgtcatcg cggcagcgac 7560

cgtgctgtgc ggtgaactct cgctgctcgc ggcacagacg aacccgggcg aactcatgcg 7620

cgcgcacgtc cagctggaac gcgacaacaa gaccgcaaag gttggtgcat agacgcgtgc 7680

g 7681

<210> 62

<211> 8224

<212> DNA

<213> Artificial Sequence

<220>

<223> Operon E containing A. thaliana, S. cerevesiae, Steptomyces sp CL190 DNA,
and R. capsulatus

<400> 62
ggccgcgtcg actacggccg caggaggagt tcatatgtca gagttgagag ccttcagtgc 60

cccagggaaa gcgttactag ctggtggata tttagtttta gatacaaaat atgaagcatt 120

tgtagtcgga ttatcggcaa gaatgcatgc tgtagcccat ccttacggtt cattgcaagg 180

gtctgataag tttgaagtgc gtgtgaaaag taaacaattt aaagatgggg agtggctgta 240

ccatataagt cctaaaagtg gcttcattcc tgtttcgata ggcggatcta agaacccttt 300

cattgaaaaa gttatcgcta acgtatttag ctactttaaa cctaacatgg acgactactg 360

caatagaaac ttgttcgtta ttgatatttt ctctgatgat gcctaccatt ctcaggagga 420

tagcgttacc gaacatcgtg gcaacagaag attgagtttt cattcgcaca gaattgaaga 480

agttcccaaa acagggctgg gctcctcggc aggtttagtc acagttttaa ctacagcttt 540

ggcctccttt tttgtatcgg acctggaaaa taatgtagac aaatatagag aagttattca 600

taatttagca caagttgctc attgtcaagc tcagggtaaa attggaagcg ggtttgatgt 660

agcggcggca gcatatggat ctatcagata tagaagattc ccacccgcat taatctctaa 720

tttgccagat attggaagtg ctacttacgg cagtaaactg gcgcatttgg ttgatgaaga 780

agactggaat attacgatta aaagtaacca tttaccttcg ggattaactt tatggatggg 840

cgatattaag aatggttcag aaacagtaaa actggtccag aaggtaaaaa attggtatga 900

ttcgcatatg ccagaaagct tgaaaatata tacagaactc gatcatgcaa attctagatt 960

tatggatgga ctatctaaac tagatcgctt acacgagact catgacgatt acagcgatca 1020

gatatttgag tctcttgaga ggaatgactg tacctgtcaa aagtatcctg aaatcacaga 1080

agttagagat gcagttgcca caattagacg ttcctttaga aaaataacta aagaatctgg 1140

tgccgatatc gaacctcccg tacaaactag cttattggat gattgccaga ccttaaaagg 1200

agttcttact tgcttaatac ctggtgctgg tggttatgac gccattgcag tgattactaa 1260

gcaagatgtt gatcttaggg ctcaaaccgc taatgacaaa agattttcta aggttcaatg 1320

gctggatgta actcaggctg actggggtgt taggaaagaa aaagatccgg aaacttatct 1380

tgataaactg caggaggagt tttaatgtca ttaccgttct taacttctgc accgggaaag 1440

gttattattt ttggtgaaca ctctgctgtg tacaacaagc ctgccgtcgc tgctagtgtg 1500

tctgcgttga gaacctacct gctaataagc gagtcatctg caccagatac tattgaattg 1560

gacttcccgg acattagctt taatcataag tggtccatca atgatttcaa tgccatcacc 1620

gaggatcaag taaactccca aaaattggcc aaggctcaac aagccaccga tggcttgtct 1680

caggaactcg ttagtctttt ggatccgttg ttagctcaac tatccgaatc cttccactac 1740

catgcagcgt tttgtttcct gtatatgttt gtttgcctat gcccccatgc caagaatatt 1800

aagttttctt taaagtctac tttacccatc ggtgctgggt tgggctcaag cgcctctatt 1860

tctgtatcac tggccttagc tatggcctac ttgggggggt taataggatc taatgacttg 1920

gaaaagctgt cagaaaacga taagcatata gtgaatcaat gggccttcat aggtgaaaag 1980

tgtattcacg gtaccccttc aggaatagat aacgctgtgg ccacttatgg taatgccctg 2040

ctatttgaaa aagactcaca taatggaaca ataaacacaa acaattttaa gttcttagat 2100

gatttcccag ccattccaat gatcctaacc tatactagaa ttccaaggtc tacaaaagat 2160

cttgttgctc gcgttcgtgt gttggtcacc gagaaatttc ctgaagttat gaagccaatt 2220

ctagatgcca tgggtgaatg tgccctacaa ggcttagaga tcatgactaa gttaagtaaa 2280

tgtaaaggca ccgatgacga ggctgtagaa actaataatg aactgtatga acaactattg 2340

gaattgataa gaataaatca tggactgctt gtctcaatcg gtgtttctca tcctggatta 2400

gaacttatta aaaatctgag cgatgatttg agaattggct ccacaaaact taccggtgct 2460

ggtggcggcg gttgctcttt gactttgtta cgaagagaca ttactcaaga gcaaattgac 2520

agcttcaaaa agaaattgca agatgatttt agttacgaga catttgaaac agacttgggt 2580

gggactggct gctgtttgtt aagcgcaaaa aatttgaata aagatcttaa aatcaaatcc 2640

ctagtattcc aattatttga aaataaaact accacaaagc aacaaattga cgatctatta 2700

ttgccaggaa acacgaattt accatggact tcagacgagg agttttaatg actgtatata 2760

ctgctagtgt aactgctccg gtaaatattg ctactcttaa gtattggggg aaaagggaca 2820

cgaagttgaa tctgcccacc aattcgtcca tatcagtgac tttatcgcaa gatgacctca 2880

gaacgttgac ctctgcggct actgcacctg agtttgaacg cgacactttg tggttaaatg 2940

gagaaccaca cagcatcgac aatgaaagaa ctcaaaattg tctgcgcgac ctacgccaat 3000

taagaaagga aatggaatcg aaggacgcct cattgcccac attatctcaa tggaaactcc 3060

acattgtctc cgaaaataac tttcctacag cagctggttt agcttcctcc gctgctggct 3120

ttgctgcatt ggtctctgca attgctaagt tataccaatt accacagtca acttcagaaa 3180

tatctagaat agcaagaaag gggtctggtt cagcttgtag atcgttgttt ggcggatacg 3240

tggcctggga aatgggaaaa gctgaagatg gtcatgattc catggcagta caaatcgcag 3300

acagctctga ctggcctcag atgaaagctt gtgtcctagt tgtcagcgat attaaaaagg 3360

atgtgagttc cactcagggt atgcaattga ccgtggcaac ctccgaacta tttaaagaaa 3420

gaattgaaca tgtcgtacca aagagatttg aagtcatgcg taaagccatt gttgaaaaag 3480

atttcgccac ctttgcaaag gaaacaatga tggattccaa ctctttccat gccacatgtt 3540

tggactcttt ccctccaata ttctacatga atgacacttc caagcgtatc atcagttggt 3600

gccacaccat taatcagttt tacggagaaa caatcgttgc atacacgttt gatgcaggtc 3660

caaatgctgt gttgtactac ttagctgaaa atgagtcgaa actctttgca tttatctata 3720

aattgtttgg ctctgttcct ggatgggaca agaaatttac tactgagcag cttgaggctt 3780

tcaaccatca atttgaatca tctaacttta ctgcacgtga attggatctt gagttgcaaa 3840

aggatgttgc cagagtgatt ttaactcaag tcggttcagg cccacaagaa acaaacgaat 3900

ctttgattga cgcaaagact ggtctaccaa aggaagagga gttttaactc gagtaggagg 3960

cacatatgtc tcagaacgtt tacattgtat cgactgccag aaccccaatt ggttcattcc 4020

agggttctct atcctccaag acagcagtgg aattgggtgc tgttgcttta aaaggcgcct 4080

tggctaaggt tccagaattg gatgcatcca aggattttga cgaaattatt tttggtaacg 4140

ttctttctgc caatttgggc caagctccgg ccagacaagt tgctttggct gccggtttga 4200

gtaatcatat cgttgcaagc acagttaaca aggtctgtgc atccgctatg aaggcaatca 4260

ttttgggtgc tcaatccatc aaatgtggta atgctgatgt tgtcgtagct ggtggttgtg 4320

aatctatgac taacgcacca tactacatgc cagcagcccg tgcgggtgcc aaatttggcc 4380

aaactgttct tgttgatggt gtcgaaagag atgggttgaa cgatgcgtac gatggtctag 4440

ccatgggtgt acacgcagaa aagtgtgccc gtgattggga tattactaga gaacaacaag 4500

acaattttgc catcgaatcc taccaaaaat ctcaaaaatc tcaaaaggaa ggtaaattcg 4560

acaatgaaat tgtacctgtt accattaagg gatttagagg taagcctgat actcaagtca 4620

cgaaggacga ggaacctgct agattacacg ttgaaaaatt gagatctgca aggactgttt 4680

tccaaaaaga aaacggtact gttactgccg ctaacgcttc tccaatcaac gatggtgctg 4740

cagccgtcat cttggtttcc gaaaaagttt tgaaggaaaa gaatttgaag cctttggcta 4800

ttatcaaagg ttggggtgag gccgctcatc aaccagctga ttttacatgg gctccatctc 4860

ttgcagttcc aaaggctttg aaacatgctg gcatcgaaga catcaattct gttgattact 4920

ttgaattcaa tgaagccttt tcggttgtcg gtttggtgaa cactaagatt ttgaagctag 4980

acccatctaa ggttaatgta tatggtggtg ctgttgctct aggtcaccca ttgggttgtt 5040

ctggtgctag agtggttgtt acactgctat ccatcttaca gcaagaagga ggtaagatcg 5100

gtgttgccgc catttgtaat ggtggtggtg gtgcttcctc tattgtcatt gaaaagatat 5160

gaggatcctc tagatgcgca ggaggcacat atggcgaaga acgttgggat tttggctatg 5220

gatatctatt tccctcccac ctgtgttcaa caggaagctt tggaagcaca tgatggagca 5280

agtaaaggga aatacactat tggacttggc caagattgtt tagctttttg cactgagctt 5340

gaagatgtta tctctatgag tttcaatgcg gtgacatcac tttttgagaa gtataagatt 5400

gaccctaacc aaatcgggcg tcttgaagta ggaagtgaga ctgttattga caaaagcaag 5460

tccatcaaga ccttcttgat gcagctcttt gagaaatgtg gaaacactga tgtcgaaggt 5520

gttgactcga ccaatgcttg ctatggtgga actgcagctt tgttaaactg tgtcaattgg 5580

gttgagagta actcttggga tggacgttat ggcctcgtca tttgtactga cagcgcggtt 5640

tatgcagaag gacccgcaag gcccactgga ggagctgcag cgattgctat gttgatagga 5700

cctgatgctc ctatcgtttt cgaaagcaaa ttgagagcaa gccacatggc tcatgtctat 5760

gacttttaca agcccaatct tgctagcgag tacccggttg ttgatggtaa gctttcacag 5820

acttgctacc tcatggctct tgactcctgc tataaacatt tatgcaacaa gttcgagaag 5880

atcgagggca aagagttctc cataaatgat gctgattaca ttgttttcca ttctccatac 5940

aataaacttg tacagaaaag ctttgctcgt ctcttgtaca acgacttctt gagaaacgca 6000

agctccattg acgaggctgc caaagaaaag ttcacccctt attcatcttt gacccttgac 6060

gagagttacc aaagccgtga tcttgaaaag gtgtcacaac aaatttcgaa accgttttat 6120

gatgctaaag tgcaaccaac gactttaata ccaaaggaag tcggtaacat gtacactgct 6180

tctctctacg ctgcatttgc ttccctcatc cacaataaac acaatgattt ggcgggaaag 6240

cgggtggtta tgttctctta tggaagtggc tccaccgcaa caatgttctc attacgcctc 6300

aacgacaata agcctccttt cagcatttca aacattgcat ctgtaatgga tgttggcggt 6360

aaattgaaag ctagacatga gtatgcacct gagaagtttg tggagacaat gaagctaatg 6420

gaacataggt atggagcaaa ggactttgtg acaaccaagg agggtattat agatcttttg 6480

gcaccgggaa cttattatct gaaagaggtt gattccttgt accggagatt ctatggcaag 6540

aaaggtgaag atggatctgt agccaatgga cactgaggat ccgtcgactc gagcacgtga 6600

ggaggcacat atgacggaaa cgcacgccat agccggggtc ccgatgaggt gggtgggacc 6660

ccttcgtatt tccgggaacg tcgccgagac cgagacccag gtcccgctcg ccacgtacga 6720

gtcgccgctg tggccgtcgg tgggccgcgg ggcgaaggtc tcccggctga cggagaaggg 6780

catcgtcgcc accctcgtcg acgagcggat gacccgctcg gtgatcgtcg aggcgacgga 6840

cgcgcagacc gcgtacatgg ccgcgcagac catccacgcc cgcatcgacg agctgcgcga 6900

ggtggtgcgc ggctgcagcc ggttcgccca gctgatcaac atcaagcacg agatcaacgc 6960

gaacctgctg ttcatccggt tcgagttcac caccggtgac gcctccggcc acaacatggc 7020

cacgctcgcc tccgatgtgc tcctggggca cctgctggag acgatccctg gcatctccta 7080

cggctcgatc tccggcaact actgcacgga caagaaggcc accgcgatca acggcatcct 7140

cggccgcggc aagaacgtga tcaccgagct gctggtgccg cgggacgtcg tcgagaacaa 7200

cctgcacacc acggctgcca agatcgtcga gctgaacatc cgcaagaacc tgctcggcac 7260

cctgctcgcc ggcggcatcc gctcggccaa cgcccacttc gcgaacatgc tgctcggctt 7320

ctacctggcc accggccagg acgccgccaa catcgtcgag ggctcgcagg gcgtcgtcat 7380

ggccgaggac cgcgacggcg acctctactt cgcctgcacc ctgccgaacc tgatcgtcgg 7440

cacggtcggc aacggcaagg gtctcggctt cgtggagacg aacctcgccc ggctcggctg 7500

ccgagccgac cgcgaacccg gggagaacgc ccgccgcctc gccgtcatcg cggcagcgac 7560

cgtgctgtgc ggtgaactct cgctgctcgc ggcacagacg aacccgggcg aactcatgcg 7620

cgcgcacgtc cagctggaac gcgacaacaa gaccgcaaag gttggtgcat agacgcggta 7680

aggaggcaca tatgagtgag cttatacccg cctgggttgg tgacagactg gctccggtgg 7740

acaagttgga ggtgcatttg aaagggctcc gccacaaggc ggtgtctgtt ttcgtcatgg 7800

atggcgaaaa cgtgctgatc cagcgccgct cggaggagaa atatcactct cccgggcttt 7860

gggcgaacac ctgctgcacc catccgggct ggaccgaacg ccccgaggaa tgcgcggtgc 7920

ggcggctgcg cgaggagctg gggatcaccg ggctttatcc cgcccatgcc gaccggctgg 7980

aatatcgcgc cgatgtcggc ggcggcatga tcgagcatga ggtggtcgac atctatctgg 8040

cctatgccaa accgcatatg cggatcaccc ccgatccgcg cgaagtggcc gaggtgcgct 8100

ggatcggcct ttacgatctg gcggccgagg ccggtcggca tcccgagcgg ttctcgaaat 8160

ggctcaacat ctatctgtcg agccatcttg accggatttt cggatcgatc ctgcgcggct 8220

gagc 8224

<210> 63

<211> 8077

<212> DNA

<213> Artificial Sequence

<220>

<223> Operon F containing A. thaliana, S. cerevisiae, and Streptomyces sp CL190
DNA

<400> 63
ccaccgcggc ggccgcgtcg acgccggcgg aggcacatat gtctcagaac gtttacattg 60

tatcgactgc cagaacccca attggttcat tccagggttc tctatcctcc aagacagcag 120

tggaattggg tgctgttgct ttaaaaggcg ccttggctaa ggttccagaa ttggatgcat 180

ccaaggattt tgacgaaatt atttttggta acgttctttc tgccaatttg ggccaagctc 240

cggccagaca agttgctttg gctgccggtt tgagtaatca tatcgttgca agcacagtta 300

acaaggtctg tgcatccgct atgaaggcaa tcattttggg tgctcaatcc atcaaatgtg 360

gtaatgctga tgttgtcgta gctggtggtt gtgaatctat gactaacgca ccatactaca 420

tgccagcagc ccgtgcgggt gccaaatttg gccaaactgt tcttgttgat ggtgtcgaaa 480

gagatgggtt gaacgatgcg tacgatggtc tagccatggg tgtacacgca gaaaagtgtg 540

cccgtgattg ggatattact agagaacaac aagacaattt tgccatcgaa tcctaccaaa 600

aatctcaaaa atctcaaaag gaaggtaaat tcgacaatga aattgtacct gttaccatta 660

agggatttag aggtaagcct gatactcaag tcacgaagga cgaggaacct gctagattac 720

acgttgaaaa attgagatct gcaaggactg ttttccaaaa agaaaacggt actgttactg 780

ccgctaacgc ttctccaatc aacgatggtg ctgcagccgt catcttggtt tccgaaaaag 840

ttttgaagga aaagaatttg aagcctttgg ctattatcaa aggttggggt gaggccgctc 900

atcaaccagc tgattttaca tgggctccat ctcttgcagt tccaaaggct ttgaaacatg 960

ctggcatcga agacatcaat tctgttgatt actttgaatt caatgaagcc ttttcggttg 1020

tcggtttggt gaacactaag attttgaagc tagacccatc taaggttaat gtatatggtg 1080

gtgctgttgc tctaggtcac ccattgggtt gttctggtgc tagagtggtt gttacactgc 1140

tatccatctt acagcaagaa ggaggtaaga tcggtgttgc cgccatttgt aatggtggtg 1200

gtggtgcttc ctctattgtc attgaaaaga tatgaggatc ctctaggtac ttccctggcg 1260

tgtgcagcgg ttgacgcgcc gtgccctcgc tgcgagcggc gcgcacatct gacgtcctgc 1320

tttattgctt tctcagaact cgggacgaag cgatcccatg atcacgcgat ctccatgcag 1380

aaaagacaaa gggagctgag tgcgttgaca ctaccgacct cggctgaggg ggtatcagaa 1440

agccaccggg cccgctcggt cggcatcggt cgcgcccacg ccaaggccat cctgctggga 1500

gagcatgcgg tcgtctacgg agcgccggca ctcgctctgc cgattccgca gctcacggtc 1560

acggccagcg tcggctggtc gtccgaggcc tccgacagtg cgggtggcct gtcctacacg 1620

atgaccggta cgccgtcgcg ggcactggtg acgcaggcct ccgacggcct gcaccggctc 1680

accgcggaat tcatggcgcg gatgggcgtg acgaacgcgc cgcacctcga cgtgatcctg 1740

gacggcgcga tcccgcacgg ccggggtctc ggctccagcg cggccggctc acgcgcgatc 1800

gccttggccc tcgccgacct cttcggccac gaactggccg agcacacggc gtacgaactg 1860

gtgcagacgg ccgagaacat ggcgcacggc cgggccagcg gcgtggacgc gatgacggtc 1920

ggcgcgtccc ggccgctgct gttccagcag ggccgcaccg agcgactggc catcggctgc 1980

gacagcctgt tcatcgtcgc cgacagcggc gtcccgggca gcaccaagga agcggtcgag 2040

atgctgcggg agggattcac ccgcagcgcc ggaacacagg agcggttcgt cggccgggcg 2100

acggaactga ccgaggccgc ccggcaggcc ctcgccgacg gccggcccga ggagctgggc 2160

tcgcagctga cgtactacca cgagctgctc catgaggccc gcctgagcac cgacggcatc 2220

gatgcgctgg tcgaggccgc gctgaaggca ggcagcctcg gagccaagat caccggcggt 2280

ggtctgggcg gctgcatgat cgcacaggcc cggcccgaac aggcccggga ggtcacccgg 2340

cagctccacg aggccggtgc cgtacagacc tgggtcgtac cgctgaaagg gctcgacaac 2400

catgcgcagt gaacacccga ccacgaccgt gctccagtcg cgggagcagg gcagcgcggc 2460

cggcgccacc gcggtcgcgc acccaaacat cgcgctgatc aagtactggg gcaagcgcga 2520

cgagcggctg atcctgccct gcaccaccag cctgtcgatg acgctggacg tcttccccac 2580

gaccaccgag gtccggctcg accccgccgc cgagcacgac acggccgccc tcaacggcga 2640

ggtggccacg ggcgagacgc tgcgccgcat cagcgccttc ctctccctgg tgcgggaggt 2700

ggcgggcagc gaccagcggg ccgtggtgga cacccgcaac accgtgccca ccggggcggg 2760

cctggcgtcc tccgccagcg ggttcgccgc cctcgccgtc gcggccgcgg ccgcctacgg 2820

gctcgaactc gacgaccgcg ggctgtcccg gctggcccga cgtggatccg gctccgcctc 2880

gcggtcgatc ttcggcggct tcgccgtctg gcacgccggc cccgacggca cggccacgga 2940

agcggacctc ggctcctacg ccgagccggt gcccgcggcc gacctcgacc cggcgctggt 3000

catcgccgtg gtcaacgccg gccccaagcc cgtctccagc cgcgaggcca tgcgccgcac 3060

cgtcgacacc tcgccgctgt accggccgtg ggccgactcc agtaaggacg acctggacga 3120

gatgcgctcg gcgctgctgc gcggcgacct cgaggccgtg ggcgagatcg cggagcgcaa 3180

cgcgctcggc atgcacgcca ccatgctggc cgcccgcccc gcggtgcggt acctgtcgcc 3240

ggccacggtc accgtgctcg acagcgtgct ccagctccgc aaggacggtg tcctggccta 3300

cgcgaccatg gacgccggtc ccaacgtgaa ggtgctgtgc cggcgggcgg acgccgagcg 3360

ggtggccgac gtcgtacgcg ccgccgcgtc cggcggtcag gtcctcgtcg ccgggccggg 3420

agacggtgcc cgcctgctga gcgagggcgc atgacgacag gtcagcgcac gatcgtccgg 3480

cacgcgccgg gcaagctgtt cgtcgcgggc gagtacgcgg tcgtggatcc gggcaacccg 3540

gcgatcctgg tagcggtcga ccggcacatc agcgtcaccg tgtccgacgc cgacgcggac 3600

accggggccg ccgacgtcgt gatctcctcc gacctcggtc cgcaggcggt cggctggcgc 3660

tggcacgacg gccggctcgt cgtccgcgac ccggacgacg ggcagcaggc gcgcagcgcc 3720

ctggcccacg tggtgtcggc gatcgagacc gtgggccggc tgctgggcga acgcggacag 3780

aaggtccccg ctctcaccct ctccgtcagc agccgcctgc acgaggacgg ccggaagttc 3840

ggcctgggct ccagcggcgc ggtgaccgtg gcgaccgtag ccgccgtcgc cgcgttctgc 3900

ggactcgaac tgtccaccga cgaacggttc cggctggcca tgctcgccac cgcggaactc 3960

gaccccaagg gctccggcgg ggacctcgcc gccagcacct ggggcggctg gatcgcctac 4020

caggcgcccg accgggcctt tgtgctcgac ctggcccggc gcgtgggagt cgaccggaca 4080

ctgaaggcgc cctggccggg gcactcggtg cgccgactgc cggcgcccaa gggcctcacc 4140

ctggaggtcg gctggaccgg agagcccgcc tccaccgcgt ccctggtgtc cgatctgcac 4200

cgccgcacct ggcggggcag cgcctcccac cagaggttcg tcgagaccac gaccgactgt 4260

gtccgctccg cggtcaccgc cctggagtcc ggcgacgaca cgagcctgct gcacgagatc 4320

cgccgggccc gccaggagct ggcccgcctg gacgacgagg tcggcctcgg catcttcaca 4380

cccaagctga cggcgctgtg cgacgccgcc gaagccgtcg gcggcgcggc caagccctcc 4440

ggggcaggcg gcggcgactg cggcatcgcc ctgctggacg ccgaggcgtc gcgggacatc 4500

acacatgtac ggcaacggtg ggagacagcc ggggtgctgc ccctgcccct gactcctgcc 4560

ctggaaggga tctaagaatg accagcgccc aacgcaagga cgaccacgta cggctcgcca 4620

tcgagcagca caacgcccac agcggacgca accagttcga cgacgtgtcg ttcgtccacc 4680

acgccctggc cggcatcgac cggccggacg tgtccctggc cacgtccttc gccgggatct 4740

cctggcaggt gccgatctac atcaacgcga tgaccggcgg cagcgagaag accggcctca 4800

tcaaccggga cctggccacc gccgcccgcg agaccggcgt ccccatcgcg tccgggtcca 4860

tgaacgcgta catcaaggac ccctcctgcg ccgacacgtt ccgtgtgctg cgcgacgaga 4920

accccaacgg gttcgtcatc gcgaacatca acgccaccac gacggtcgac aacgcgcagc 4980

gcgcgatcga cctgatcgag gcgaacgccc tgcagatcca catcaacacg gcgcaggaga 5040

cgccgatgcc ggagggcgac cggtcgttcg cgtcctgggt cccgcagatc gagaagatcg 5100

cggcggccgt cgacatcccc gtgatcgtca aggaggtcgg caacggcctg agccggcaga 5160

ccatcctgct gctcgccgac ctcggcgtgc aggcggcgga cgtcagcggc cgcggcggca 5220

cggacttcgc ccgcatcgag aacggccgcc gggagctcgg cgactacgcg ttcctgcacg 5280

gctgggggca gtccaccgcc gcctgcctgc tggacgccca ggacatctcc ctgcccgtcc 5340

tcgcctccgg cggtgtgcgt cacccgctcg acgtggtccg cgccctcgcg ctcggcgccc 5400

gcgccgtcgg ctcctccgcc ggcttcctgc gcaccctgat ggacgacggc gtcgacgcgc 5460

tgatcacgaa gctcacgacc tggctggacc agctggcggc gctgcagacc atgctcggcg 5520

cgcgcacccc ggccgacctc acccgctgcg acgtgctgct ccacggcgag ctgcgtgact 5580

tctgcgccga ccggggcatc gacacgcgcc gcctcgccca gcgctccagc tccatcgagg 5640

ccctccagac gacgggaagc acacgatgac ggaaacgcac gccatagccg gggtcccgat 5700

gaggtgggtg ggacccttc gtatttccgg gaacgtcgcc gagaccgaga cccaggtccc 5760

gctcgccacg tacgagtcgc cgctgtggcc gtcggtgggc cgcggggcga aggtctcccg 5820

gctgacggag aagggcatcg tcgccaccct cgtcgacgag cggatgaccc gctcggtgat 5880

cgtcgaggcg acggacgcgc agaccgcgta catggccgcg cagaccatcc acgcccgcat 5940

cgacgagctg cgcgaggtgg tgcgcggctg cagccggttc gcccagctga tcaacatcaa 6000

gcacgagatc aacgcgaacc tgctgttcat ccggttcgag ttcaccaccg gtgacgcctc 6060

cggccacaac atggccacgc tcgcctccga tgtgctcctg gggcacctgc tggagacgat 6120

ccctggcatc tcctacggct cgatctccgg caactactgc acggacaaga aggccaccgc 6180

gatcaacggc atcctcggcc gcggcaagaa cgtgatcacc gagctgctgg tgccgcggga 6240

cgtcgtcgag aacaacctgc acaccacggc tgccaagatc gtcgagctga acatccgcaa 6300

gaacctgctc ggcaccctgc tcgccggcgg catccgctcg gccaacgccc acttcgcgaa 6360

catgctgctc ggcttctacc tggccaccgg ccaggacgcc gccaacatcg tcgagggctc 6420

gcagggcgtc gtcatggccg aggaccgcga cggcgacctc tacttcgcct gcaccctgcc 6480

gaacctgatc gtcggcacgg tcggcaacgg caagggtctc ggcttcgtgg agacgaacct 6540

cgcccggctc ggctgccgag ccgaccgcga acccggggag aacgcccgcc gcctcgccgt 6600

catcgcggca gcgaccgtgc tgtgcggtga actctcgctg ctcgcggcac agacgaaccc 6660

gggcgaactc atgcgcgcgc acgtccagct ggaacgcgac aacaagaccg caaaggttgg 6720

tgcatagggc atgtccatct ccataggcat tcacgacctg tcgttcgcca caaccgagtt 6780

cgtcctgccg cacacggcgc tcgccgagta caacggcacc gagatcggca agtaccacgt 6840

cggcatcggc cagcagtcga tgagcgtgcc ggccgccgac gaggacatcg tgaccatggc 6900

cgcgaccgcg gcgcggccca tcatcgagcg caacggcaag agccggatcc gcacggtcgt 6960

gttcgccacg gagtcgtcga tcgaccaggc gaaggcgggc ggcgtgtacg tgcactccct 7020

gctggggctg gagtcggcct gccgggtcgt cgagctgaag caggcctgct acggggccac 7080

cgccgccctt cagttcgcca tcggcctggt gcggcgcgac cccgcccagc aggtcctggt 7140

catcgccagt gacgtctcca agtacgagct ggacagcccc ggcgaggcga cccagggcgc 7200

ggccgcggtg gccatgctgg tcggcgccga cccggccctg ctgcgtatcg aggagccgtc 7260

gggcctgttc accgccgacg tcatggactt ctggcggccc aactacctca ccaccgctct 7320

ggtcgacggc caggagtcca tcaacgccta cctgcaggcc gtcgagggcg cctggaagga 7380

ctacgcggag caggacggcc ggtcgctgga ggagttcgcg gcgttcgtct accaccagcc 7440

gttcacgaag atggcctaca aggcgcaccg ccacctgctg aacttcaacg gctacgacac 7500

cgacaaggac gccatcgagg gcgccctcgg ccagacgacg gcgtacaaca acgtcatcgg 7560

caacagctac accgcgtcgg tgtacctggg cctggccgcc ctgctcgacc aggcggacga 7620

cctgacgggc cgttccatcg gcttcctgag ctacggctcg ggcagcgtcg ccgagttctt 7680

ctcgggcacc gtcgtcgccg ggtaccgcga gcgtctgcgc accgaggcga accaggaggc 7740

gatcgcccgg cgcaagagcg tcgactacgc cacctaccgc gagctgcacg agtacacgct 7800

cccgtccgac ggcggcgacc acgccacccc ggtgcagacc accggcccct tccggctggc 7860

cgggatcaac gaccacaagc gcatctacga ggcgcgctag cgacacccct cggcaacggg 7920

gtgcgccact gttcggcgca ccccgtgccg ggctttcgca cagctattca cgaccatttg 7980

aggggcgggc agccgcatga ccgacgtccg attccgcatt atcggtacgg gtgcctacct 8040

agaactagtg gatccccccgg gctgcaggaa ttcgata 8077

<210> 64

<211> 8400

<212> DNA

<213> Artificial Sequence

<220>

<223> Operon G containing A. thaliana, S. cerevisiae, and S. pombe DNA

<400> 64

ggccgcagga ggagttcata tgtcagagtt gagagccttc agtgccccag ggaaagcgtt 60

actagctggt ggatatttag ttttagatac aaaatatgaa gcatttgtag tcggattatc 120

ggcaagaatg catgctgtag cccatcctta cggttcattg caagggtctg ataagtttga 180

agtgcgtgtg aaaagtaaac aatttaaaga tggggagtgg ctgtaccata taagtcctaa 240

aagtggcttc attcctgttt cgataggcgg atctaagaac cctttcattg aaaaagttat 300

cgctaacgta tttagctact ttaaacctaa catggacgac tactgcaata gaaacttgtt 360

cgttattgat attttctctg atgatgccta ccattctcag gaggatagcg ttaccgaaca 420

tcgtggcaac agaagattga gttttcattc gcacagaatt gaagaagttc ccaaaacagg 480

gctgggctcc tcggcaggtt tagtcacagt tttaactaca gctttggcct ccttttttgt 540

atcggacctg gaaaataatg tagacaaata tagagaagtt attcataatt tagcacaagt 600

tgctcattgt caagctcagg gtaaaattgg aagcgggttt gatgtagcgg cggcagcata 660

tggatctatc agatatagaa gattcccacc cgcattaatc tctaatttgc cagatattgg 720

aagtgctact tacggcagta aactggcgca tttggttgat gaagaagact ggaatattac 780

gattaaaagt aaccatttac cttcgggatt aactttatgg atgggcgata ttaagaatgg 840

ttcagaaaca gtaaaactgg tccagaaggt aaaaaattgg tatgattcgc atatgccaga 900

aagcttgaaa atatatacag aactcgatca tgcaaattct agatttatgg atggactatc 960

taaactagat cgcttacacg agactcatga cgattacagc gatcagatat ttgagtctct 1020

tgagaggaat gactgtacct gtcaaaagta tcctgaaatc acagaagtta gagatgcagt 1080

tgccacaatt agacgttcct ttagaaaaat aactaaagaa tctggtgccg atatcgaacc 1140

tcccgtacaa actagcttat tggatgattg ccagacctta aaaggagttc ttacttgctt 1200

aatacctggt gctggtggtt atgacgccat tgcagtgatt actaagcaag atgttgatct 1260

tagggctcaa accgctaatg acaaaagatt ttctaaggtt caatggctgg atgtaactca 1320

ggctgactgg ggtgttagga aagaaaaaga tccggaaact tatcttgata aactgcagga 1380

ggagttttaa tgtcattacc gttcttaact tctgcaccgg gaaaggttat tattttggt 1440

gaacactctg ctgtgtacaa caagcctgcc gtcgctgcta gtgtgtctgc gttgagaacc 1500

tacctgctaa taagcgagtc atctgcacca gatactattg aattggactt cccggacatt 1560

agctttaatc ataagtggtc catcaatgat ttcaatgcca tcaccgagga tcaagtaaac 1620

tcccaaaaat tggccaaggc tcaacaagcc accgatggct tgtctcagga actcgttagt 1680

cttttggatc cgttgttagc tcaactatcc gaatccttcc actaccatgc agcgttttgt 1740

ttcctgtata tgtttgtttg cctatgcccc catgccaaga atattaagtt ttctttaaag 1800

tctactttac ccatcggtgc tgggttgggc tcaagcgcct ctatttctgt atcactggcc 1860

ttagctatgg cctacttggg ggggttaata ggatctaatg acttggaaaa gctgtcagaa 1920

aacgataagc atatagtgaa tcaatgggcc ttcataggtg aaaagtgtat tcacggtacc 1980

ccttcaggaa tagataacgc tgtggccact tatggtaatg ccctgctatt tgaaaaagac 2040

tcacataatg gaacaataaa cacaaacaat tttaagttct tagatgattt cccagccatt 2100

ccaatgatcc taacctatac tagaattcca aggtctacaa aagatcttgt tgctcgcgtt 2160

cgtgtgttgg tcaccgagaa atttcctgaa gttatgaagc caattctaga tgccatgggt 2220

gaatgtgccc tacaaggctt agagatcatg actaagttaa gtaaatgtaa aggcaccgat 2280

gacgaggctg tagaaactaa taatgaactg tatgaacaac tattggaatt gataagaata 2340

aatcatggac tgcttgtctc aatcggtgtt tctcatcctg gattagaact tattaaaaat 2400

ctgagcgatg atttgagaat tggctccaca aaacttaccg gtgctggtgg cggcggttgc 2460

tctttgactt tgttacgaag agacattact caagagcaaa ttgacagctt caaaaagaaa 2520

ttgcaagatg attttagtta cgagacattt gaaacagact tgggtgggac tggctgctgt 2580

ttgttaagcg caaaaaattt gaataaagat cttaaaatca aatccctagt attccaatta 2640

tttgaaaata aaactaccac aaagcaacaa attgacgatc tattattgcc aggaaacacg 2700

aatttaccat ggacttcaga cgaggagttt taatgactgt atatactgct agtgtaactg 2760

ctccggtaaa tattgctact cttaagtatt gggggaaaag ggacacgaag ttgaatctgc 2820

ccaccaattc gtccatatca gtgactttat cgcaagatga cctcagaacg ttgacctctg 2880

cggctactgc acctgagttt gaacgcgaca ctttgtggtt aaatggagaa ccacacagca 2940

tcgacaatga aagaactcaa aattgtctgc gcgacctacg ccaattaaga aaggaaatgg 3000

aatcgaagga cgcctcattg cccacattat ctcaatggaa actccacatt gtctccgaaa 3060

ataactttcc tacagcagct ggtttagctt cctccgctgc tggctttgct gcattggtct 3120

ctgcaattgc taagttatac caattaccac agtcaacttc agaaatatct agaatagcaa 3180

gaaaggggtc tggttcagct tgtagatcgt tgtttggcgg atacgtggcc tgggaaatgg 3240

gaaaagctga agatggtcat gattccatgg cagtacaaat cgcagacagc tctgactggc 3300

ctcagatgaa agcttgtgtc ctagttgtca gcgatattaa aaaggatgtg agttccactc 3360

agggtatgca attgaccgtg gcaacctccg aactatttaa agaaagaatt gaacatgtcg 3420

taccaaagag atttgaagtc atgcgtaaag ccattgttga aaaagatttc gccacctttg 3480

caaaggaaac aatgatggat tccaactctt tccatgccac atgtttggac tctttccctc 3540

caatattcta catgaatgac acttccaagc gtatcatcag ttggtgccac accattaatc 3600

agttttacgg agaaacaatc gttgcataca cgtttgatgc aggtccaaat gctgtgttgt 3660

actacttagc tgaaaatgag tcgaaactct ttgcatttat ctataaattg tttggctctg 3720

ttcctggatg ggacaagaaa tttactactg agcagcttga ggctttcaac catcaatttg 3780

aatcatctaa ctttactgca cgtgaattgg atcttgagtt gcaaaaggat gttgccagag 3840

tgattttaac tcaagtcggt tcaggcccac aagaaacaaa cgaatctttg attgacgcaa 3900

agactggtct accaaaggaa gaggagtttt aactcgacgc cggcggaggc acatatgtct 3960

cagaacgttt acattgtatc gactgccaga accccaattg gttcattcca gggttctcta 4020

tcctccaaga cagcagtgga attgggtgct gttgctttaa aaggcgcctt ggctaaggtt 4080

ccagaattgg atgcatccaa ggattttgac gaaattattt ttggtaacgt tctttctgcc 4140

aatttgggcc aagctccggc cagacaagtt gctttggctg ccggtttgag taatcatatc 4200

gttgcaagca cagttaacaa ggtctgtgca tccgctatga aggcaatcat tttgggtgct 4260

caatccatca aatgtggtaa tgctgatgtt gtcgtagctg gtggttgtga atctatgact 4320

aacgcaccat actacatgcc agcagcccgt gcgggtgcca aatttggcca aactgttctt 4380

gttgatggtg tcgaaagaga tgggttgaac gatgcgtacg atggtctagc catgggtgta 4440

cacgcagaaa agtgtgcccg tgattgggat attactagag aacaacaaga caattttgcc 4500

atcgaatcct accaaaaatc tcaaaaatct caaaaggaag gtaaattcga caatgaaatt 4560

gtacctgtta ccattaaggg atttagaggt aagcctgata ctcaagtcac gaaggacgag 4620

gaacctgcta gattacacgt tgaaaaattg agatctgcaa ggactgtttt ccaaaaagaa 4680

aacggtactg ttactgccgc taacgcttct ccaatcaacg atggtgctgc agccgtcatc 4740

ttggtttccg aaaaagtttt gaaggaaaag aatttgaagc ctttggctat tatcaaaggt 4800

tggggtgagg ccgctcatca accagctgat tttacatggg ctccatctct tgcagttcca 4860

aaggctttga aacatgctgg catcgaagac atcaattctg ttgattactt tgaattcaat 4920

gaagcctttt cggttgtcgg tttggtgaac actaagattt tgaagctaga cccatctaag 4980

gttaatgtat atggtggtgc tgttgctcta ggtcacccat tgggttgttc tggtgctaga 5040

gtggttgtta cactgctatc catcttacag caagaaggag gtaagatcgg tgttgccgcc 5100

atttgtaatg gtggtggtgg tgcttcctct attgtcattg aaaagatatg aggatcctct 5160

agatgcgcag gaggcacata tggcgaagaa cgttgggatt ttggctatgg atatctattt 5220

ccctcccacc tgtgttcaac aggaagcttt ggaagcacat gatggagcaa gtaaagggaa 5280

atacactatt ggacttggcc aagattgttt agctttttgc actgagcttg aagatgttat 5340

ctctatgagt ttcaatgcgg tgacatcact ttttgagaag tataagattg accctaacca 5400

aatcgggcgt cttgaagtag gaagtgagac tgttattgac aaaagcaagt ccatcaagac 5460

cttcttgatg cagctctttg agaaatgtgg aaacactgat gtcgaaggtg ttgactcgac 5520

caatgcttgc tatggtggaa ctgcagcttt gttaaactgt gtcaattggg ttgagagtaa 5580

ctcttgggat ggacgttatg gcctcgtcat ttgtactgac agcgcggttt atgcagaagg 5640

acccgcaagg cccactggag gagctgcagc gattgctatg ttgataggac ctgatgctcc 5700

tatcgttttc gaaagcaaat tgagagcaag ccacatggct catgtctatg acttttacaa 5760

gcccaatctt gctagcgagt acccggttgt tgatggtaag ctttcacaga cttgctacct 5820

catggctctt gactcctgct ataaacattt atgcaacaag ttcgagaaga tcgagggcaa 5880

agagttctcc ataaatgatg ctgattacat tgttttccat tctccataca ataaacttgt 5940

acagaaaagc tttgctcgtc tcttgtacaa cgacttcttg agaaacgcaa gctccattga 6000

cgaggctgcc aaagaaaagt tcacccctta ttcatctttg acccttgacg agagttacca 6060

aagccgtgat cttgaaaagg tgtcacaaca aatttcgaaa ccgttttatg atgctaaagt 6120

gcaaccaacg actttaatac caaaggaagt cggtaacatg tacactgctt ctctctacgc 6180

tgcatttgct tccctcatcc acaataaaca caatgatttg gcgggaaagc gggtggttat 6240

gttctcttat ggaagtggct ccaccgcaac aatgttctca ttacgcctca acgacaataa 6300

gcctcctttc agcatttcaa acattgcatc tgtaatggat gttggcggta aattgaaagc 6360

tagacatgag tatgcacctg agaagtttgt ggagacaatg aagctaatgg aacataggta 6420

tggagcaaag gactttgtga caaccaagga gggtattata gatcttttgg caccgggaac 6480

ttattatctg aaagaggttg attccttgta ccggagattc tatggcaaga aaggtgaaga 6540

tggatctgta gccaatggac actgaggatc cgtcgagcac gtggaggcac atatgcaatg 6600

ctgtgagatg cctgttggat acattcagat tcctgttggg attgctggtc cattgttgct 6660

tgatggttat gagtactctg ttcctatggc tacaaccgaa ggttgtttgg ttgctagcac 6720

taacagaggc tgcaaggcta tgtttatctc tggtggcgcc accagtaccg ttcttaagga 6780

cggtatgacc cgagcacctg ttgttcggtt cgcttcggcg agacgagctt cggagcttaa 6840

gtttttcttg gagaatccag agaactttga tactttggca gtagtcttca acaggtcgag 6900

tagatttgca agactgcaaa gtgttaaatg cacaatcgcg gggaagaatg cttatgtaag 6960

gttctgttgt agtactggtg atgctatggg gatgaatatg gtttctaaag gtgtgcagaa 7020

tgttcttgag tatcttaccg atgatttccc tgacatggat gtgattggaa tctctggtaa 7080

cttctgttcg gacaagaaac ctgctgctgt gaactggatt gagggacgtg gtaaatcagt 7140

tgtttgcgag gctgtaatca gaggagagat cgtgaacaag gtcttgaaaa cgagcgtggc 7200

tgctttagtc gagctcaaca tgctcaagaa cctagctggc tctgctgttg caggctctct 7260

aggtggattc aacgctcatg ccagtaacat agtgtctgct gtattcatag ctactggcca 7320

agatccagct caaaacgtgg agagttctca atgcatcacc atgatggaag ctattaatga 7380

cggcaaagat atccatatct cagtcactat gccatctatc gaggtgggga cagtgggagg 7440

aggaacacag cttgcatctc aatcagcgtg tttaaacctg ctcggagtta aaggagcaag 7500

cacagagtcg ccgggaatga acgcaaggag gctagcgacg atcgtagccg gagcagtttt 7560

agctggagag ttatctttaa tgtcagcaat tgcagctgga cagcttgtga gaagtcacat 7620

gaaatacaat agatccagcc gagacatctc tggagcaacg acaacgacaa caacaacaac 7680

atgacccgta ggaggcacat atgagttccc aacaagagaa aaaggattat gatgaagaac 7740

aattaaggtt gatggaagaa gtttgtatcg ttgtagatga aaatgatgtc cctttaagat 7800

atggaacgaa aaaggagtgt catttgatgg aaaatataaa taaaggtctt ttgcatagag 7860

cattctctat gttcatcttt gatgagcaaa atcgcctttt acttcagcag cgtgcagaag 7920

agaaaattac atttccatcc ttatggacga atacatgttg ctcccaccca ttggatgttg 7980

ctggtgaacg tggtaatact ttacctgaag ctgttgaagg tgttaagaat gcagctcaac 8040

gcaagctgtt ccatgaattg ggtattcaag ccaagtatat tcccaaagac aaatttcagt 8100

ttcttacacg aatccattac cttgctccta gtactggtgc ttggggagag catgaaattg 8160

actacattct tttcttcaaa ggtaaagttg agctggatat caatcccaat gaagttcaag 8220

cctataagta tgttactatg gaagagttaa aagagatgtt ttccgatcct caatatggat 8280

tcacaccatg gttcaaactt atttgtgagc attttatgtt taaatggtgg caggatgtag 8340

atcatgcgtc aaaattccaa gataccttaa ttcatcgttg ctaaggatcc cccgggatcc 8400

<210> 65

<211> 55

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing R. capsulatus DNA

<400> 65
gcgatatcgg atccaggagg accatatgat cgccgaagcg gatatggagg tctgc 55

<210> 66

<211> 50

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer containing R. capsulatus DNA

<400> 66
gcgatatcaa gcttggatcc tcaatccatc gccaggccgc ggtcgcgcgc 50

<210> 67

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and R. caopsulatus DNA

<400> 67
ctttcctgaa acataattta taatcagatc caggaggacc atatgatcgc cgaagcggat 60

<210> 68

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and R. capsulatus DNA

<400> 68
cgaccgcggc ctggcgatgg attgaggatc taaacaaacc cggaacagac cgttgggaag 60

<210> 69

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and R. capsulatus DNA

<400> 69
atttttcatc tcgaattgta ttcccacgaa ggccgcgtcg actacggccg caggaggagt 60

<210> 70

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing N. tabacum and R. capsulatus DNA

<400> 70
ttcggatcga tcctgcgcgg ctgagcggcc ggaatggtga agttgaaaaa cgaatccttc 60

<210> 71

<211> 1020

<212> DNA

<213> Rhodobacter capsulatus

<400> 71
atgatcgccg aagcggatat ggaggtctgc cgggagctga tccgcaccgg cagctactcc 60

ttccatgcgg cgtccagagt tctgccggcg cgggtccgtg accccgcgct ggcgctttac 120

gccttttgcc gcgtcgccga tgacgaagtc gacgaggttg gcgcgccgcg cgacaaggct 180

gcggcggttt tgaaacttgg cgaccggctg gaggacatct atgccggtcg tccgcgcaat 240

gcgccctcgg atcgggcttt cgcggcggtg gtcgaggaat tcgagatgcc gcgcgaattg 300

cccgaggcgc tgctggaggg cttcgcctgg gatgccgagg ggcggtggta tcacacgctt 360

tcggacgtgc aggcctattc ggcgcgggtg gcggccgccg tcggcgcgat gatgtgcgtg 420

ctgatgcggg tgcgcaaccc cgatgcgctg gcgcgggcct gcgatctcgg tcttgccatg 480

cagatgtcga acatcgcccg cgacgtgggc gaggatgccc gggcggggcg gcttttcctg 540

ccgaccgact ggatggtcga ggaggggatc gatccgcagg cgttcctggc cgatccgcag 600

cccaccaagg gcatccgccg ggtcaccgag cggttgctga accgcgccga ccggctttac 660

tggcgggcgg cgacgggggt gcggcttttg ccctttgact gccgaccggg gatcatggcc 720

gcgggcaaga tctatgccgc gatcggggcc gaggtggcga aggcgaaata cgacaacatc 780

acccggcgtg cccacacgac caagggccgc aagctgtggc tggtggcgaa ttccgcgatg 840

tcggcgacgg cgacctcgat gctgccgctc tcgccgcggg tgcatgccaa gcccgagccc 900

gaagtggcgc atctggtcga tgccgccgcg catcgcaacc tgcatcccga acggtccgag 960

gtgctgatct cggcgctgat ggcgctgaag gcgcgcgacc gcggcctggc gatggattga 1020

<210> 72

<211> 13917

<212> DNA

<213> Artificial Sequence

<220>

<221> misc_feature

<222> ()..()

<223> Plastid transformation vector pHK04, containing Operon B, contain
i

<400> 72

gcacttttcg gggaaatgtg cgcggaaccc ctatttgttt atttttctaa atacattcaa 60

atatgtatcc gctcatgaga caataaccct gataaatgct tcaataatat tgaaaaagga 120

agagtatgag tattcaacat ttccgtgtcg cccttattcc ctttttttgcg gcattttgcc 180

ttcctgtttt tgctcaccca gaaacgctgg tgaaagtaaa agatgctgaa gatcagttgg 240

gtgcacgagt gggttacatc gaactggatc tcaacagcgg taagatcctt gagagttttc 300

gccccgaaga acgttttcca atgatgagca ctttaaagt tctgctatgt ggcgcggtat 360

tatcccgtat tgacgccggg caagagcaac tcggtcgccg catacactat tctcagaatg 420

acttggttga gtactcacca gtcacagaaa agcatcttac ggatggcatg acagtaagag 480

aattatgcag tgctgccata accatgagtg ataacactgc ggccaactta cttctgacaa 540

cgatcggagg accgaaggag ctaaccgctt ttttgcacaa catgggggat catgtaactc 600

gccttgatcg ttgggaaccg gagctgaatg aagccatacc aaacgacgag cgtgacacca 660

cgatgcctgt agcaatggca acaacgttgc gcaaactatt aactggcgaa ctacttactc 720

tagcttcccg gcaacaatta atagactgga tggaggcgga taaagttgca ggaccacttc 780

tgcgctcggc ccttccggct ggctggttta ttgctgataa atctggagcc ggtgagcgtg 840

ggtctcgcgg tatcattgca gcactggggc cagatggtaa gccctcccgt atcgtagtta 900

tctacacgac ggggagtcag gcaactatgg atgaacgaaa tagacagatc gctgagatag 960

gtgcctcact gattaagcat tggtaactgt cagaccaagt ttactcatat atactttaga 1020

ttgatttaaa acttcatttt taatttaaaa ggatctaggt gaagatcctt tttgataatc 1080

tcatgaccaa aatcccttaa cgtgagtttt cgttccactg agcgtcagac cccgtagaaa 1140

agatcaaagg atcttcttga gatccttttt ttctgcgcgt aatctgctgc ttgcaaacaa 1200

aaaaaccacc gctaccagcg gtggtttgtt tgccggatca agagctacca actcttttc 1260

cgaaggtaac tggcttcagc agagcgcaga taccaaatac tgtccttcta gtgtagccgt 1320

agttaggcca ccacttcaag aactctgtag caccgcctac atacctcgct ctgctaatcc 1380

tgttaccagt ggctgctgcc agtggcgata agtcgtgtct taccgggttg gactcaagac 1440

gatagttacc ggataaggcg cagcggtcgg gctgaacggg gggttcgtgc acacagccca 1500

gcttggagcg aacgacctac accgaactga gatacctaca gcgtgagcta tgagaaagcg 1560

ccacgcttcc cgaagggaga aaggcggaca ggtatccggt aagcggcagg gtcggaacag 1620

gagagcgcac gagggagctt ccagggggaa acgcctggta tctttatagt cctgtcgggt 1680

ttcgccacct ctgacttgag cgtcgatttt tgtgatgctc gtcaggggggg cggagcctat 1740

ggaaaaacgc cagcaacgcg gccttttac ggttcctggc cttttgctgg ccttttgctc 1800

acatgttctt tcctgcgtta tcccctgatt ctgtggataa ccgtattacc gcctttgagt 1860

gagctgatac cgctcgccgc agccgaacga ccgagcgcag cgagtcagtg agcgaggaag 1920

cggaagagcg cccaatacgc aaaccgcctc tccccgcgcg ttggccgatt cattaatgca 1980

gctggcacga caggtttccc gactggaaag cgggcagtga gcgcaacgca attaatgtga 2040

gttagctcac tcattaggca ccccaggctt tacactttat gcttccggct cgtatgttgt 2100

gtggaattgt gagcggataa caatttcaca caggaaacag ctatgaccat gattacgcca 2160

agctcgaaat taaccctcac taaagggaac aaaagctgga gctccaccgc ggtggcggcc 2220

gctctagaac tagtggatct tcttggctgt tattcaaaag gtccaacaat gtatatatat 2280

tggacatttt gaggcaatta tagatcctgg aaggcaattc tgattggtca ataaaaatcg 2340

atttcaatgc tatttttttt ttgtttttta tgagtttagc caatttatca tgaaaggtaa 2400

aaggggataa aggaaccgtg tgttgattgt cctgtaaata taagttgtct tcctccatat 2460

gtaaaaaggg aataaataaa tcaattaaat ttcgggatgc ttcatgaagt gcttctttcg 2520

gagttaaact tccgtttgtc catatttcga gaaaaagtat ctcttgtttt tcattcccat 2580

tcccataaga atgaatacta tgattcgcgt ttcgaacagg catgaataca gcatctatag 2640

gataacttcc atcttgaaag ttatgtggcg tttttataag atatccacga tttctctcta 2700

tttgtaatcc aatacaaaaa tcaattggtt ccgttaaact ggctatatgt tgtgtattat 2760

caacgatttc tacataaggc ggcaagatga tatcttgggc agttacagat ccaggaccct 2820

tgacacaaat agatgcgtca gaagttccat atagattact tcttaatata atttctttca 2880

aattcattaa aatttcatgt accgattctt gaatgcccgt tatggtagaa tattcatgtg 2940

ggactttctc agattttaca cgtgtgatac atgttccttc tatttctcca agtaaagctc 3000

ttcgcatcgc aatgcctatt gtgtcggctt ggcctttcat aagtggagac agaataaagc 3060

gtccataata aaggcgttta ctgtctgttc ttgattcaac acacttccac tgtagtgtcc 3120

gagtagatac tgttactttc tctcgaacca tagtactatt atttgattag atcatcgaat 3180

cttttatttc tcttgagatt tcttcaatgt tcagttctac acacgtcttt ttttcggagg 3240

tctacagcca ttatgtggca taggagttac atcccgtacg aaagttaata gtataccact 3300

tcgacgaata gctcgtaatg ctgcatctct tccgagaccg ggacctttta tcatgacttc 3360

tgctcgttgc ataccttgat ccactactgt acggatagcg tttgctgctg cggtttgagc 3420

agcaaacggt gttcctcttc tcgtaccttt gaatccagaa gtaccggcgg aggaccaaga 3480

aactactcga ccccgtacat ctgtaacagt gacaatggta ttattgaaac ttgcttgaac 3540

atgaataact ccctttggta ttctacgtgc acccttacgt gaaccaatac gtccattcct 3600

acgcgaacta attttcggta tagcttttgc catattttat catctcgtaa atatgagtca 3660

gagatatatg gatatatcca tttcatgtca aaacagattc tttatttgta catcggctct 3720

tctggcaagt ctgattatcc ctgtctttgt ttatgtctcg ggttggaaca aattactata 3780

attcgtcccc gcctacggat tagtcgacat ttttcacaaa ttttacgaac ggaagctctt 3840

attttcatat ttctcattcc ttaccttaat tctgaatcta tttcttggaa gaaaataagt 3900

ttcttgaaat ttttcatctc gaattgtatt cccacgaaag gaatggtgaa gttgaaaaac 3960

gaatccttca aatctttgtt gtggagtcga taaattatac gccctttggt tgaatcataa 4020

ggacttactt caattttgac tctatctcct ggcagtatcc gtataaaact atgccggatc 4080

tttcctgaaa cataatttat aatcagatcg gccgcaggag gagttcatat gtcagagttg 4140

agagccttca gtgccccagg gaaagcgtta ctagctggtg gatatttagt tttagataca 4200

aaatatgaag catttgtagt cggattatcg gcaagaatgc atgctgtagc ccatccttac 4260

ggttcattgc aagggtctga taagtttgaa gtgcgtgtga aaagtaaaca atttaaagat 4320

ggggagtggc tgtaccatat aagtcctaaa agtggcttca ttcctgtttc gataggcgga 4380

tctaagaacc ctttcattga aaaagttatc gctaacgtat ttagctactt taaacctaac 4440

atggacgact actgcaatag aaacttgttc gttattgata ttttctctga tgatgcctac 4500

cattctcagg aggatagcgt taccgaacat cgtggcaaca gaagattgag ttttcattcg 4560

cacagaattg aagaagttcc caaaacaggg ctgggctcct cggcaggttt agtcacagtt 4620

ttaactacag ctttggcctc ctttttttgta tcggacctgg aaaataatgt agacaaatat 4680

agagaagtta ttcataattt agcacaagtt gctcattgtc aagctcaggg taaaattgga 4740

agcgggtttg atgtagcggc ggcagcatat ggatctatca gatatagaag attcccaccc 4800

gcattaatct ctaatttgcc agatattgga agtgctactt acggcagtaa actggcgcat 4860
ttggttgatg aagaagactg gaatattacg attaaaagta accatttacc ttcgggatta 4920
actttatgga tgggcgatat taagaatggt tcagaaacag taaaactggt ccagaaggta 4980
aaaaattggt atgattcgca tatgccagaa agcttgaaaa tatatacaga actcgatcat 5040
gcaaattcta gatttatgga tggactatct aaactagatc gcttacacga gactcatgac 5100
gattacagcg atcagatatt tgagtctctt gagaggaatg actgtacctg tcaaaagtat 5160
cctgaaatca cagaagttag agatgcagtt gccacaatta gacgttcctt tagaaaaata 5220
actaaagaat ctggtgccga tatcgaacct cccgtacaaa ctagcttatt ggatgattgc 5280
cagaccttaa aaggagttct tacttgctta atacctggtg ctggtggtta tgacgccatt 5340
gcagtgatta ctaagcaaga tgttgatctt agggctcaaa ccgctaatga caaaagattt 5400
tctaaggttc aatggctgga tgtaactcag gctgactggg gtgttaggaa agaaaaagat 5460
ccggaaactt atcttgataa actgcaggag gagttttaat gtcattaccg ttcttaactt 5520
ctgcaccggg aaaggttatt atttttggtg aacactctgc tgtgtacaac aagcctgccg 5580
tcgctgctag tgtgtctgcg ttgagaacct acctgctaat aagcgagtca tctgcaccag 5640
atactattga attggacttc ccggacatta gctttaatca taagtggtcc atcaatgatt 5700
tcaatgccat caccgaggat caagtaaact cccaaaaatt ggccaaggct caacaagcca 5760
ccgatggctt gtctcaggaa ctcgttagtc ttttggatcc gttgttagct caactatccg 5820
aatccttcca ctaccatgca gcgttttgtt tcctgtatat gtttgtttgc ctatgccccc 5880
atgccaagaa tattaagttt tctttaaagt ctactttacc catcggtgct gggttgggct 5940
caagcgcctc tatttctgta tcactggcct tagctatggc ctacttgggg gggttaatag 6000
gatctaatga cttggaaaag ctgtcagaaa acgataagca tatagtgaat caatgggcct 6060
tcataggtga aaagtgtatt cacggtaccc cttcaggaat agataacgct gtggccactt 6120
atggtaatgc cctgctattt gaaaaagact cacataatgg aacaataaac acaaacaatt 6180
ttaagttctt agatgatttc ccagccattc caatgatcct aacctatact agaattccaa 6240
ggtctacaaa agatcttgtt gctcgcgttc gtgtgttggt caccgagaaa tttcctgaag 6300
ttatgaagcc aattctagat gccatgggtg aatgtgccct acaaggctta gagatcatga 6360
ctaagttaag taaatgtaaa ggcaccgatg acgaggctgt agaaactaat aatgaactgt 6420
atgaacaact attggaattg ataagaataa atcatggact gcttgtctca atcggtgttt 6480
ctcatcctgg attagaactt attaaaaatc tgagcgatga tttgagaatt ggctccacaa 6540
aacttaccgg tgctggtggc ggcggttgct ctttgacttt gttacgaaga gacattactc 6600

aagagcaaat tgacagcttc aaaaagaaat tgcaagatga ttttagttac gagacatttg 6660

aaacagactt gggtgggact ggctgctgtt tgttaagcgc aaaaaatttg aataaagatc 6720

ttaaaatcaa atccctagta ttccaattat ttgaaaataa aactaccaca aagcaacaaa 6780

ttgacgatct attattgcca ggaaacacga atttaccatg gacttcagac gaggagtttt 6840

aatgactgta tatactgcta gtgtaactgc tccggtaaat attgctactc ttaagtattg 6900

ggggaaaagg gacacgaagt tgaatctgcc caccaattcg tccatatcag tgactttatc 6960

gcaagatgac ctcagaacgt tgacctctgc ggctactgca cctgagtttg aacgcgacac 7020

tttgtggtta aatggagaac cacacagcat cgacaatgaa agaactcaaa attgtctgcg 7080

cgacctacgc caattaagaa aggaaatgga atcgaaggac gcctcattgc ccacattatc 7140

tcaatggaaa ctccacattg tctccgaaaa taactttcct acagcagctg gtttagcttc 7200

ctccgctgct ggctttgctg cattggtctc tgcaattgct aagttatacc aattaccaca 7260

gtcaacttca gaaatatcta gaatagcaag aaaggggtct ggttcagctt gtagatcgtt 7320

gtttggcgga tacgtggcct gggaaatggg aaaagctgaa gatggtcatg attccatggc 7380

agtacaaatc gcagacagct ctgactggcc tcagatgaaa gcttgtgtcc tagttgtcag 7440

cgatattaaa aaggatgtga gttccactca gggtatgcaa ttgaccgtgg caacctccga 7500

actatttaaa gaaagaattg aacatgtcgt accaaagaga tttgaagtca tgcgtaaagc 7560

cattgttgaa aaagatttcg ccacctttgc aaaggaaaca atgatggatt ccaactcttt 7620

ccatgccaca tgtttggact ctttccctcc aatattctac atgaatgaca cttccaagcg 7680

tatcatcagt tggtgccaca ccattaatca gttttacgga gaaacaatcg ttgcatacac 7740

gtttgatgca ggtccaaatg ctgtgttgta ctacttagct gaaaatgagt cgaaactctt 7800

tgcatttatc tataaattgt ttggctctgt tcctggatgg gacaagaaat ttactactga 7860

gcagcttgag gctttcaacc atcaatttga atcatctaac tttactgcac gtgaattgga 7920

tcttgagttg caaaaggatg ttgccagagt gattttaact caagtcggtt caggcccaca 7980

agaaacaaac gaatctttga ttgacgcaaa gactggtcta ccaaaggaag aggagtttta 8040

actcgacgcc ggcggaggca catatgtctc agaacgttta cattgtatcg actgccagaa 8100

ccccaattgg ttcattccag ggttctctat cctccaagac agcagtggaa ttgggtgctg 8160

ttgctttaaa aggcgccttg gctaaggttc cagaattgga tgcatccaag gattttgacg 8220

aaattatttt tggtaacgtt ctttctgcca atttgggcca agctccggcc agacaagttg 8280

ctttggctgc cggtttgagt aatcatatcg ttgcaagcac agttaacaag gtctgtgcat 8340

ccgctatgaa ggcaatcatt ttgggtgctc aatccatcaa atgtggtaat gctgatgttg 8400

tcgtagctgg tggttgtgaa tctatgacta acgcaccata ctacatgcca gcagcccgtg 8460

cgggtgccaa atttggccaa actgttcttg ttgatggtgt cgaaagagat gggttgaacg 8520

atgcgtacga tggtctagcc atgggtgtac acgcagaaaa gtgtgcccgt gattgggata 8580

ttactagaga acaacaagac aattttgcca tcgaatccta ccaaaaatct caaaaatctc 8640

aaaaggaagg taaattcgac aatgaaattg tacctgttac cattaaggga tttagaggta 8700

agcctgatac tcaagtcacg aaggacgagg aacctgctag attacacgtt gaaaaattga 8760

gatctgcaag gactgttttc caaaaagaaa acggtactgt tactgccgct aacgcttctc 8820

caatcaacga tggtgctgca gccgtcatct tggtttccga aaaagttttg aaggaaaaga 8880

atttgaagcc tttggctatt atcaaaggtt ggggtgaggc cgctcatcaa ccagctgatt 8940

ttacatgggc tccatctctt gcagttccaa aggctttgaa acatgctggc atcgaagaca 9000

tcaattctgt tgattacttt gaattcaatg aagccttttc ggttgtcggt ttggtgaaca 9060

ctaagatttt gaagctagac ccatctaagg ttaatgtata tggtggtgct gttgctctag 9120

gtcacccatt gggttgttct ggtgctagag tggttgttac actgctatcc atcttacagc 9180

aagaaggagg taagatcggt gttgccgcca tttgtaatgg tggtggtggt gcttcctcta 9240

ttgtcattga aaagatatga ggatcctcta gatgcgcagg aggcacatat ggcgaagaac 9300

gttgggattt tggctatgga tatctatttc cctcccacct gtgttcaaca ggaagctttg 9360

gaagcacatg atggagcaag taaagggaaa tacactattg gacttggcca agattgttta 9420

gctttttgca ctgagcttga agatgttatc tctatgagtt tcaatgcggt gacatcactt 9480

tttgagaagt ataagattga ccctaaccaa atcgggcgtc ttgaagtagg aagtgagact 9540

gttattgaca aaagcaagtc catcaagacc ttcttgatgc agctctttga gaaatgtgga 9600

aacactgatg tcgaaggtgt tgactcgacc aatgcttgct atggtggaac tgcagctttg 9660

ttaaactgtg tcaattgggt tgagagtaac tcttgggatg gacgttatgg cctcgtcatt 9720

tgtactgaca gcgcggttta tgcagaagga cccgcaaggc ccactggagg agctgcagcg 9780

attgctatgt tgataggacc tgatgctcct atcgttttcg aaagcaaatt gagagcaagc 9840

cacatggctc atgtctatga cttttacaag cccaatcttg ctagcgagta cccggttgtt 9900

gatggtaagc tttcacagac ttgctacctc atggctcttg actcctgcta taaacattta 9960

tgcaacaagt tcgagaagat cgagggcaaa gagttctcca taaatgatgc tgattacatt 10020

gttttccatt ctccatacaa taaacttgta cagaaaagct ttgctcgtct cttgtacaac 10080

gacttcttga gaaacgcaag ctccattgac gaggctgcca aagaaaagtt caccccttat 10140

tcatctttga cccttgacga gagttaccaa agccgtgatc ttgaaaaggt gtcacaacaa 10200

atttcgaaac cgttttatga tgctaaagtg caaccaacga ctttaatacc aaaggaagtc 10260

ggtaacatgt acactgcttc tctctacgct gcatttgctt ccctcatcca caataaacac 10320

aatgatttgg cgggaaagcg ggtggttatg ttctcttatg gaagtggctc caccgcaaca 10380

atgttctcat tacgcctcaa cgacaataag cctcctttca gcatttcaaa cattgcatct 10440

gtaatggatg ttggcggtaa attgaaagct agacatgagt atgcacctga gaagtttgtg 10500

gagacaatga agctaatgga acataggtat ggagcaaagg actttgtgac aaccaaggag 10560

ggtattatag atcttttggc accgggaact tattatctga aagaggttga ttccttgtac 10620

cggagattct atggcaagaa aggtgaagat ggatctgtag ccaatggaca ctgaggatcc 10680

gtcgagcacg tggaggcaca tatgcaatgc tgtgagatgc ctgttggata cattcagatt 10740

cctgttggga ttgctggtcc attgttgctt gatggttatg agtactctgt tcctatggct 10800

acaaccgaag gttgtttggt tgctagcact aacagaggct gcaaggctat gtttatctct 10860

ggtggcgcca ccagtaccgt tcttaaggac ggtatgaccc gagcacctgt tgttcggttc 10920

gcttcggcga gacgagcttc ggagcttaag tttttcttgg agaatccaga gaactttgat 10980

actttggcag tagtcttcaa caggtcgagt agatttgcaa gactgcaaag tgttaaatgc 11040

acaatcgcgg ggaagaatgc ttatgtaagg ttctgttgta gtactggtga tgctatgggg 11100

atgaatatgg tttctaaagg tgtgcagaat gttcttgagt atcttaccga tgatttccct 11160

gacatggatg tgattggaat ctctggtaac ttctgttcgg acaagaaacc tgctgctgtg 11220

aactggattg agggacgtgg taaatcagtt gtttgcgagg ctgtaatcag aggagagatc 11280

gtgaacaagg tcttgaaaac gagcgtggct gctttagtcg agctcaacat gctcaagaac 11340

ctagctggct ctgctgttgc aggctctcta ggtggattca acgctcatgc cagtaacata 11400

gtgtctgctg tattcatagc tactggccaa gatccagctc aaaacgtgga gagttctcaa 11460

tgcatcacca tgatggaagc tattaatgac ggcaaagata tccatatctc agtcactatg 11520

ccatctatcg aggtggggac agtgggagga ggaacacagc ttgcatctca atcagcgtgt 11580

ttaaacctgc tcggagttaa aggagcaagc acagagtcgc cgggaatgaa cgcaaggagg 11640

ctagcgacga tcgtagccgg agcagtttta gctggagagt tatctttaat gtcagcaatt 11700

gcagctggac agcttgtgag aagtcacatg aaatacaata gatccagccg agacatctct 11760

ggagcaacga caacgacaac aacaacaaca tgacccggga tccggccgat ctaaacaaac 11820

ccggaacaga ccgttgggaa gcgattcagt aattaaagct tcatgactcc tttttggttc 11880

ttaaagtccc tttgaggtat caactaataa gaaagatatt agacaacccc ccttttttct 11940

ttttcacaaa taggaagttt cgaatccaat ttggatatta aaaggattac cagatataac 12000

acaaaatctc tccacctatt ccttctagtc gagcctctcg gtctgtcatt atacctcgag 12060
aagtagaaag aattacaatc cccattccac ctaaaattcg cggaattcgt tgataattag 12120
aatagattcg tagaccaggt cgactgattc gttttaaatt taaaatattt ctatagggtc 12180
ttttcctatt ccttctatgt cgcagggtta aaaccaaaaa atatttgttt ttttctcgat 12240
gttttctcac gttttcgata aaaccttctc gtaaaagtat ttgaacaata ttttcggtaa 12300
tattagtaga tgctattcga accacccttt ttcgatccat atcagcattt cgtatagaag 12360
ttattatctc agcaatagtg tccctaccca tgatgaacta aaattattgg ggcctccaaa 12420
tttgatataa tcaacgtgtt ttttacttat ttttttttttg aatatgatat gaattattaa 12480
agatatatgc gtgagacaca atctactaat taatctattt ctttcaaata ccccactaga 12540
aacagatcac aatttcattt tataatacct cgggagctaa tgaaactatt ttagtaaaat 12600
ttaattctct caattcccgg gcgattgcac caaaaattcg agttcctttt gatttccttc 12660
cttcttgatc aataacaact gcagcattgt catcatatcg tattatcatc ccgttgtcac 12720
gtttgagttc tttacaggtc cgcacaatta cagctctgac tacttctgat ctttctaggg 12780
gcatatttgg tacggcttct ttgatcacag caacaataac gtcaccaata tgagcatatc 12840
gacgattgct agctcctatg attcgaatac acatcaattc tcgagccccg ctgttatccg 12900
ctacatttaa atgggtctga ggttgaatca ttttttttaat ccgttctttg aatgcaaagg 12960
gcgaagaaaa aaaagaaata tttttgtcca aaaaaaaaga aacatgcggt ttcgtttcat 13020
atctaagagc cctttccgca tttttttcta ttacattacg aaataatgaa ttgagttcgt 13080
ataggcattt tagatgctgc tagtgaaata gcccttctgg ctatattttc tgttactcca 13140
cccatttcat aaagtattcg acccggttta acaacagcta cccaatattc aggggatccc 13200
ccgggctgca ggaattcgat atcaagctta tcgataccgt cgacctcgag gggggcccg 13260
gtacccaatt cgccctatag tgagtcgtat tacaattcac tggccgtcgt tttacaacgt 13320
cgtgactggg aaaaccctgg cgttacccaa cttaatcgcc ttgcagcaca tccccctttc 13380
gccagctggc gtaatagcga agaggcccgc accgatcgcc cttcccaaca gttgcgcagc 13440
ctgaatggcg aatgggacgc gccctgtagc ggcgcattaa gcgcggcggg tgtggtggtt 13500
acgcgcagcg tgaccgctac acttgccagc gccctagcgc ccgctccttt cgctttcttc 13560
ccttcctttc tcgccacgtt cgccggcttt ccccgtcaag ctctaaatcg ggggctccct 13620
ttagggttcc gatttagtgc tttacggcac ctcgacccca aaaaacttga ttagggtgat 13680
ggttcacgta gtgggccatc gccctgatag acggtttttc gccctttgac gttggagtcc 13740
acgttcttta atagtggact cttgttccaa actggaacaa cactcaaccc tatctcggtc 13800

tattcttttg atttataagg gattttgccg atttcggcct attggttaaa aaatgagctg 13860

atttaacaaa aatttaacgc gaattttaac aaaatattaa cgcttacaat ttaggtg 13917

<210> 73

<211> 7252

<212> DNA

<213> Artificial Sequence

<220>

<221> misc_feature

<222> ()..()

<223> Plastid transformation vector pHKO7, containing Operon C, contain
i

<400> 73

gcacttttcg gggaaatgtg cgcggaaccc ctatttgttt atttttctaa atacattcaa 60

atatgtatcc gctcatgaga caataaccct gataaatgct tcaataatat tgaaaaagga 120

agagtatgag tattcaacat ttccgtgtcg cccttattcc ctttttttgcg gcattttgcc 180

ttcctgtttt tgctcaccca gaaacgctgg tgaaagtaaa agatgctgaa gatcagttgg 240

gtgcacgagt gggttacatc gaactggatc tcaacagcgg taagatcctt gagagttttc 300

gccccgaaga acgttttcca atgatgagca cttttaaagt tctgctatgt ggcgcggtat 360

tatcccgtat tgacgccggg caagagcaac tcggtcgccg catacactat tctcagaatg 420

acttggttga gtactcacca gtcacagaaa agcatcttac ggatggcatg acagtaagag 480

aattatgcag tgctgccata accatgagtg ataacactgc ggccaactta cttctgacaa 540

cgatcggagg accgaaggag ctaaccgctt ttttgcacaa catgggggat catgtaactc 600

gccttgatcg ttgggaaccg gagctgaatg aagccatacc aaacgacgag cgtgacacca 660

cgatgcctgt agcaatggca acaacgttgc gcaaactatt aactggcgaa ctacttactc 720

tagcttcccg gcaacaatta atagactgga tggaggcgga taaagttgca ggaccacttc 780

tgcgctcggc ccttccggct ggctggttta ttgctgataa atctggagcc ggtgagcgtg 840

ggtctcgcgg tatcattgca gcactggggc cagatggtaa gccctcccgt atcgtagtta 900

tctacacgac ggggagtcag gcaactatgg atgaacgaaa tagacagatc gctgagatag 960

gtgcctcact gattaagcat tggtaactgt cagaccaagt ttactcatat atactttaga 1020

ttgatttaaa acttcatttt taatttaaaa ggatctaggt gaagatcctt tttgataatc 1080

tcatgaccaa aatcccttaa cgtgagtttt cgttccactg agcgtcagac cccgtagaaa 1140

agatcaaagg atcttcttga gatccttttt ttctgcgcgt aatctgctgc ttgcaaacaa 1200

aaaaaccacc gctaccagcg gtggtttgtt tgccggatca agagctacca actcttttc 1260

cgaaggtaac tggcttcagc agagcgcaga taccaaatac tgtccttcta gtgtagccgt 1320

agttaggcca ccacttcaag aactctgtag caccgcctac atacctcgct ctgctaatcc 1380

tgttaccagt ggctgctgcc agtggcgata agtcgtgtct taccgggttg gactcaagac 1440

gatagttacc ggataaggcg cagcggtcgg gctgaacggg gggttcgtgc acacagccca 1500

gcttggagcg aacgacctac accgaactga gatacctaca gcgtgagcta tgagaaagcg 1560

ccacgcttcc cgaagggaga aaggcggaca ggtatccggt aagcggcagg gtcggaacag 1620

gagagcgcac gagggagctt ccagggggaa acgcctggta tctttatagt cctgtcgggt 1680

ttcgccacct ctgacttgag cgtcgatttt tgtgatgctc gtcaggggggg cggagcctat 1740

ggaaaaacgc cagcaacgcg gccttttttac ggttcctggc cttttgctgg ccttttgctc 1800

acatgttctt tcctgcgtta tcccctgatt ctgtggataa ccgtattacc gcctttgagt 1860

gagctgatac cgctcgccgc agccgaacga ccgagcgcag cgagtcagtg agcgaggaag 1920

cggaagagcg cccaatacgc aaaccgcctc tccccgcgcg ttggccgatt cattaatgca 1980

gctggcacga caggtttccc gactggaaag cgggcagtga gcgcaacgca attaatgtga 2040

gttagctcac tcattaggca ccccaggctt tacactttat gcttccggct cgtatgttgt 2100

gtggaattgt gagcggataa caatttcaca caggaaacag ctatgaccat gattacgcca 2160

agctcgaaat taaccctcac taaagggaac aaaagctgga gctccaccgc ggtggcggcc 2220

gctctagaac tagtggatct tcttggctgt tattcaaaag gtccaacaat gtatatatat 2280

tggacatttt gaggcaatta tagatcctgg aaggcaattc tgattggtca ataaaaatcg 2340

atttcaatgc tatttttttt ttgtttttta tgagtttagc caatttatca tgaaaggtaa 2400

aaggggataa aggaaccgtg tgttgattgt cctgtaaata taagttgtct tcctccatat 2460

gtaaaaaggg aataaataaa tcaattaaat ttcgggatgc ttcatgaagt gcttctttcg 2520

gagttaaact tccgtttgtc catatttcga gaaaaagtat ctcttgtttt tcattcccat 2580

tcccataaga atgaatacta tgattcgcgt ttcgaacagg catgaataca gcatctatag 2640

gataacttcc atcttgaaag ttatgtggcg tttttataag atatccacga tttctctcta 2700

tttgtaatcc aatacaaaaa tcaattggtt ccgttaaact ggctatatgt tgtgtattat 2760

caacgatttc tacataaggc ggcaagatga tatcttgggc agttacagat ccaggaccct 2820

tgacacaaat agatgcgtca gaagttccat atagattact tcttaatata atttctttca 2880

aattcattaa aatttcatgt accgattctt gaatgcccgt tatggtagaa tattcatgtg 2940

ggactttctc agattttaca cgtgtgatac atgttccttc tatttctcca agtaaagctc 3000

ttcgcatcgc aatgcctatt gtgtcggctt ggcctttcat aagtggagac agaataaagc 3060

gtccataata aaggcgttta ctgtctgttc ttgattcaac acacttccac tgtagtgtcc 3120

gagtagatac tgttactttc tctcgaacca tagtactatt atttgattag atcatcgaat 3180

cttttatttc tcttgagatt tcttcaatgt tcagttctac acacgtcttt ttttcggagg 3240

tctacagcca ttatgtggca taggagttac atcccgtacg aaagttaata gtataccact 3300

tcgacgaata gctcgtaatg ctgcatctct tccgagaccg ggacctttta tcatgacttc 3360

tgctcgttgc ataccttgat ccactactgt acggatagcg tttgctgctg cggtttgagc 3420

agcaaacggt gttcctcttc tcgtaccttt gaatccagaa gtaccggcgg aggaccaaga 3480

aactactcga ccccgtacat ctgtaacagt gacaatggta ttattgaaac ttgcttgaac 3540

atgaataact ccctttggta ttctacgtgc acccttacgt gaaccaatac gtccattcct 3600

acgcgaacta attttcggta tagcttttgc catattttat catctcgtaa atatgagtca 3660

gagatatatg gatatatcca tttcatgtca aaacagattc tttatttgta catcggctct 3720

tctggcaagt ctgattatcc ctgtctttgt ttatgtctcg ggttggaaca aattactata 3780

attcgtcccc gcctacggat tagtcgacat ttttcacaaa ttttacgaac ggaagctctt 3840

attttcatat ttctcattcc ttaccttaat tctgaatcta tttcttggaa gaaaataagt 3900

ttcttgaaat ttttcatctc gaattgtatt cccacgaaag gaatggtgaa gttgaaaaac 3960

gaatccttca aatctttgtt gtggagtcga taaattatac gccctttggt tgaatcataa 4020

ggacttactt caattttgac tctatctcct ggcagtatcc gtataaaact atgccggatc 4080

tttcctgaaa cataatttat aatcagatcc aggaggacca tatgatcgcc gaagcggata 4140

tggaggtctg ccgggagctg atccgcaccg gcagctactc cttccatgcg gcgtccagag 4200

ttctgccggc gcgggtccgt gaccccgcgc tggcgcttta cgcctttttgc cgcgtcgccg 4260

atgacgaagt cgacgaggtt ggcgcgccgc gcgacaaggc tgcggcggtt ttgaaacttg 4320

gcgaccggct ggaggacatc tatgccggtc gtccgcgcaa tgcgccctcg gatcgggctt 4380

tcgcggcggt ggtcgaggaa ttcgagatgc cgcgcgaatt gcccgaggcg ctgctggagg 4440

gcttcgcctg ggatgccgag gggcggtggt atcacacgct ttcggacgtg caggcctatt 4500

cggcgcgggt ggcggccgcc gtcggcgcga tgatgtgcgt gctgatgcgg gtgcgcaacc 4560

ccgatgcgct ggcgcgggcc tgcgatctcg gtcttgccat gcagatgtcg aacatcgccc 4620

gcgacgtggg cgaggatgcc cgggcggggc ggcttttcct gccgaccgac tggatggtcg 4680

aggaggggat cgatccgcag gcgttcctgg ccgatccgca gcccaccaag ggcatccgcc 4740

gggtcaccga gcggttgctg aaccgcgccg accggcttta ctggcgggcg gcgacggggg 4800

tgcggctttt gccctttgac tgccgaccgg ggatcatggc cgcgggcaag atctatgccg 4860

cgatcggggc cgaggtggcg aaggcgaaat acgacaacat cacccggcgt gcccacacga 4920

ccaagggccg caagctgtgg ctggtggcga attccgcgat gtcggcgacg gcgacctcga 4980

tgctgccgct ctcgccgcgg gtgcatgcca agcccgagcc cgaagtggcg catctggtcg 5040

atgccgccgc gcatcgcaac ctgcatcccg aacggtccga ggtgctgatc tcggcgctga 5100

tggcgctgaa ggcgcgcgac cgcggcctgg cgatggattg aggatctaaa caaacccgga 5160

acagaccgtt gggaagcgat tcagtaatta aagcttcatg actccttttt ggttcttaaa 5220

gtcccctttga ggtatcaact aataagaaag atattagaca acccccctttt tttctttttc 5280

acaaatagga agtttcgaat ccaatttgga tattaaaagg attaccagat ataacacaaa 5340

atctctccac ctattccttc tagtcgagcc tctcggtctg tcattatacc tcgagaagta 5400

gaaagaatta caatccccat tccacctaaa attcgcggaa ttcgttgata attagaatag 5460

attcgtagac caggtcgact gattcgtttt aaatttaaaa tatttctata gggtcttttc 5520

ctattccttc tatgtcgcag ggttaaaacc aaaaaatatt tgtttttttc tcgatgtttt 5580

ctcacgtttt cgataaaacc ttctcgtaaa agtatttgaa caatattttc ggtaatatta 5640

gtagatgcta ttcgaaccac ccttttcga tccatatcag catttcgtat agaagttatt 5700

atctcagcaa tagtgtccct acccatgatg aactaaaatt attggggcct ccaaatttga 5760

tataatcaac gtgtttttta cttatttttt ttttgaatat gatatgaatt attaaagata 5820

tatgcgtgag acacaatcta ctaattaatc tatttctttc aaatacccca ctagaaacag 5880

atcacaattt cattttataa tacctcggga gctaatgaaa ctattttagt aaaatttaat 5940

tctctcaatt cccgggcgat tgcaccaaaa attcgagttc cttttgattt ccttccttct 6000

tgatcaataa caactgcagc attgtcatca tatcgtatta tcatcccgtt gtcacgtttg 6060

agttctttac aggtccgcac aattacagct ctgactactt ctgatctttc taggggcata 6120

tttggtacgg cttctttgat cacagcaaca ataacgtcac caatatgagc atatcgacga 6180

ttgctagctc ctatgattcg aatacacatc aattctcgag ccccgctgtt atccgctaca 6240

tttaaatggg tctgaggttg aatcattttt ttaatccgtt ctttgaatgc aaagggcgaa 6300

gaaaaaaaag aaatattttt gtccaaaaaa aaagaaacat gcggtttcgt ttcatatcta 6360

agagcccttt ccgcattttt ttctattaca ttacgaaata atgaattgag ttcgtatagg 6420

cattttagat gctgctagtg aaatagccct tctggctata ttttctgtta ctccacccat 6480

ttcataaagt attcgacccg gtttaacaac agctacccaa tattcagggg atcccccggg 6540

ctgcaggaat tcgatatcaa gcttatcgat accgtcgacc tcgaggggggg gcccggtacc 6600

caattcgccc tatagtgagt cgtattacaa ttcactggcc gtcgttttac aacgtcgtga 6660

ctgggaaaac cctggcgtta cccaacttaa tcgccttgca gcacatcccc ctttcgccag 6720

ctggcgtaat agcgaagagg cccgcaccga tcgcccttcc caacagttgc gcagcctgaa 6780

tggcgaatgg gacgcgccct gtagcggcgc attaagcgcg gcgggtgtgg tggttacgcg 6840

cagcgtgacc gctacacttg ccagcgccct agcgcccgct cctttcgctt tcttcccttc 6900

ctttctcgcc acgttcgccg gctttccccg tcaagctcta aatcgggggc tcccttttagg 6960

gttccgattt agtgctttac ggcacctcga ccccaaaaaa cttgattagg gtgatggttc 7020

acgtagtggg ccatcgccct gatagacggt ttttcgccct ttgacgttgg agtccacgtt 7080

ctttaatagt ggactcttgt tccaaactgg aacaacactc aaccctatct cggtctattc 7140

ttttgattta taagggattt tgccgatttc ggcctattgg ttaaaaaatg agctgattta 7200

acaaaaattt aacgcgaatt ttaacaaaat attaacgctt acaatttagg tg 7252

<210> 74

<211> 14623

<212> DNA

<213> Artificial Sequence

<220>

<221> misc_feature

<222> ()..()

<223> Plastic transformation vector pHKO8, containing Operon G, contain
i

<400> 74

cacctaaatt gtaagcgtta atattttgtt aaaattcgcg ttaaattttt gttaaatcag 60

ctcatttttt aaccaatagg ccgaaatcgg caaaatccct tataaatcaa aagaatagac 120

cgagataggg ttgagtgttg ttccagtttg gaacaagagt ccactattaa agaacgtgga 180

ctccaacgtc aaagggcgaa aaaccgtcta tcagggcgat ggcccactac gtgaaccatc 240

accctaatca agtttttttgg ggtcgaggtg ccgtaaagca ctaaatcgga accctaaagg 300

gagcccccga tttagagctt gacggggaaa gccggcgaac gtggcgagaa aggaagggaa 360

gaaagcgaaa ggagcgggcg ctagggcgct ggcaagtgta gcggtcacgc tgcgcgtaac 420

caccacaccc gccgcgctta atgcgccgct acagggcgcg tcccattcgc cattcaggct 480

gcgcaactgt tgggaagggc gatcggtgcg ggcctcttcg ctattacgcc agctggcgaa 540

aggggatgt gctgcaaggc gattaagttg ggtaacgcca gggttttccc agtcacgacg 600

ttgtaaaacg acggccagtg aattgtaata cgactcacta tagggcgaat tgggtaccgg 660

gccccccctc gaggtcgacg gtatcgataa gcttgatatc gaattcctgc agcccggggg 720

atcttcttgg ctgttattca aaaggtccaa caatgtatat atattggaca ttttgaggca 780

attatagatc ctggaaggca attctgattg gtcaataaaa atcgatttca atgctatttt 840

ttttttgttt tttatgagtt tagccaattt atcatgaaag gtaaaagggg ataaaggaac 900

cgtgtgttga ttgtcctgta aatataagtt gtcttcctcc atatgtaaaa agggaataaa 960

taaatcaatt aaatttcggg atgcttcatg aagtgcttct ttcggagtta aacttccgtt 1020

tgtccatatt tcgagaaaaa gtatctcttg tttttcattc ccattcccat aagaatgaat 1080

actatgattc gcgtttcgaa caggcatgaa tacagcatct ataggataac ttccatcttg 1140

aaagttatgt ggcgttttta taagatatcc acgatttctc tctatttgta atccaataca 1200

aaaatcaatt ggttccgtta aactggctat atgttgtgta ttatcaacga tttctacata 1260

aggcggcaag atgatatctt gggcagttac agatccagga cccttgacac aaatagatgc 1320

gtcagaagtt ccatatagat tacttcttaa tataatttct ttcaaattca ttaaaatttc 1380

atgtaccgat tcttgaatgc ccgttatggt agaatattca tgtgggactt tctcagattt 1440

tacacgtgtg atacatgttc cttctatttc tccaagtaaa gctcttcgca tcgcaatgcc 1500

tattgtgtcg gcttggcctt tcataagtgg agacagaata aagcgtccat aataaaggcg 1560

tttactgtct gttcttgatt caacacactt ccactgtagt gtccgagtag atactgttac 1620

tttctctcga accatagtac tattatttga ttagatcatc gaatctttta tttctcttga 1680

gatttcttca atgttcagtt ctacacacgt ctttttttcg gaggtctaca gccattatgt 1740

ggcataggag ttacatcccg tacgaaagtt aatagtatac cacttcgacg aatagctcgt 1800

aatgctgcat ctcttccgag accgggacct tttatcatga cttctgctcg ttgcatacct 1860

tgatccacta ctgtacggat agcgtttgct gctgcggttt gagcagcaaa cggtgttcct 1920

cttctcgtac ctttgaatcc agaagtaccg gcggaggacc aagaaactac tcgaccccgt 1980

acatctgtaa cagtgacaat ggtattattg aaacttgctt gaacatgaat aactcccttt 2040

ggtattctac gtgcaccctt acgtgaacca atacgtccat tcctacgcga actaattttc 2100

ggtatagctt ttgccatatt ttatcatctc gtaaatatga gtcagagata tatggatata 2160

tccatttcat gtcaaaacag attctttatt tgtacatcgg ctcttctggc aagtctgatt 2220

atccctgtct ttgtttatgt ctcgggttgg aacaaattac tataattcgt ccccgcctac 2280

ggattagtcg acatttttca caaattttac gaacggaagc tcttattttc atatttctca 2340

ttccttacct taattctgaa tctatttctt ggaagaaaat aagtttcttg aaatttttca 2400

tctcgaattg tattcccacg aaaggaatgg tgaagttgaa aaacgaatcc ttcaaatctt 2460

tgttgtggag tcgataaatt atacgccctt tggttgaatc ataaggactt acttcaattt 2520

tgactctatc tcctggcagt atccgtataa aactatgccg gatctttcct gaaacataat 2580

ttataatcag atcggccgca ggaggagttc atatgtcaga gttgagagcc ttcagtgccc 2640

cagggaaagc gttactagct ggtggatatt tagttttaga tacaaaatat gaagcatttg 2700

tagtcggatt atcggcaaga atgcatgctg tagcccatcc ttacggttca ttgcaagggt 2760

ctgataagtt tgaagtgcgt gtgaaaagta aacaatttaa agatggggag tggctgtacc 2820

atataagtcc taaaagtggc ttcattcctg tttcgatagg cggatctaag aacccttttca 2880

ttgaaaaagt tatcgctaac gtatttagct actttaaacc taacatggac gactactgca 2940

atagaaactt gttcgttatt gatattttct ctgatgatgc ctaccattct caggaggata 3000

gcgttaccga acatcgtggc aacagaagat tgagttttca ttcgcacaga attgaagaag 3060

ttcccaaaac agggctgggc tcctcggcag gtttagtcac agttttaact acagctttgg 3120

cctccttttt tgtatcggac ctggaaaata atgtagacaa atatagagaa gttattcata 3180

atttagcaca agttgctcat tgtcaagctc agggtaaaat tggaagcggg tttgatgtag 3240

cggcggcagc atatggatct atcagatata gaagattccc acccgcatta atctctaatt 3300

tgccagatat tggaagtgct acttacggca gtaaactggc gcatttggtt gatgaagaag 3360

actggaatat tacgattaaa agtaaccatt taccttcggg attaacttta tggatgggcg 3420

atattaagaa tggttcagaa acagtaaaac tggtccagaa ggtaaaaaat tggtatgatt 3480

cgcatatgcc agaaagcttg aaaatatata cagaactcga tcatgcaaat tctagattta 3540

tggatggact atctaaacta gatcgcttac acgagactca tgacgattac agcgatcaga 3600

tatttgagtc tcttgagagg aatgactgta cctgtcaaaa gtatcctgaa atcacagaag 3660

ttagagatgc agttgccaca attagacgtt cctttagaaa aataactaaa gaatctggtg 3720

ccgatatcga acctcccgta caaactagct tattggatga ttgccagacc ttaaaaggag 3780

ttcttacttg cttaatacct ggtgctggtg gttatgacgc cattgcagtg attactaagc 3840

aagatgttga tcttagggct caaaccgcta atgacaaaag attttctaag gttcaatggc 3900

tggatgtaac tcaggctgac tggggtgtta ggaaagaaaa agatccggaa acttatcttg 3960

ataaactgca ggaggagttt taatgtcatt accgttctta acttctgcac cgggaaaggt 4020

tattattttt ggtgaacact ctgctgtgta caacaagcct gccgtcgctg ctagtgtgtc 4080

tgcgttgaga acctacctgc taataagcga gtcatctgca ccagatacta ttgaattgga 4140

cttcccggac attagcttta atcataagtg gtccatcaat gatttcaatg ccatcaccga 4200

ggatcaagta aactcccaaa aattggccaa ggctcaacaa gccaccgatg gcttgtctca 4260

ggaactcgtt agtcttttgg atccgttgtt agctcaacta tccgaatcct tccactacca 4320

tgcagcgttt tgtttcctgt atatgtttgt ttgcctatgc ccccatgcca agaatattaa 4380

gttttcttta aagtctactt tacccatcgg tgctgggttg ggctcaagcg cctctatttc 4440

tgtatcactg gccttagcta tggcctactt ggggggggtta ataggatcta atgacttgga 4500

aaagctgtca gaaaacgata agcatatagt gaatcaatgg gccttcatag gtgaaaagtg 4560

tattcacggt acccccttcag gaatagataa cgctgtggcc acttatggta atgccctgct 4620

atttgaaaaa gactcacata atggaacaat aaacacaaac aattttaagt tcttagatga 4680

tttcccagcc attccaatga tcctaaccta tactagaatt ccaaggtcta caaaagatct 4740

tgttgctcgc gttcgtgtgt tggtcaccga gaaatttcct gaagttatga agccaattct 4800

agatgccatg ggtgaatgtg ccctacaagg cttagagatc atgactaagt taagtaaatg 4860

taaaggcacc gatgacgagg ctgtagaaac taataatgaa ctgtatgaac aactattgga 4920

attgataaga ataaatcatg gactgcttgt ctcaatcggt gtttctcatc ctggattaga 4980

acttattaaa aatctgagcg atgatttgag aattggctcc acaaaactta ccggtgctgg 5040

tggcggcggt tgctctttga ctttgttacg aagagacatt actcaagagc aaattgacag 5100

cttcaaaaag aaattgcaag atgattttag ttacgagaca tttgaaacag acttgggtgg 5160

gactggctgc tgtttgttaa gcgcaaaaaa tttgaataaa gatcttaaaa tcaaatccct 5220

agtattccaa ttatttgaaa ataaaactac cacaaagcaa caaattgacg atctattatt 5280

gccaggaaac acgaatttac catggacttc agacgaggag ttttaatgac tgtatatact 5340

gctagtgtaa ctgctccggt aaatattgct actcttaagt attgggggaa aagggacacg 5400

aagttgaatc tgcccaccaa ttcgtccata tcagtgactt tatcgcaaga tgacctcaga 5460

acgttgacct ctgcggctac tgcacctgag tttgaacgcg acactttgtg gttaaatgga 5520

gaaccacaca gcatcgacaa tgaaagaact caaaattgtc tgcgcgacct acgccaatta 5580

agaaaggaaa tggaatcgaa ggacgcctca ttgcccacat tatctcaatg gaaactccac 5640

attgtctccg aaaataactt tcctacagca gctggtttag cttcctccgc tgctggcttt 5700

gctgcattgg tctctgcaat tgctaagtta taccaattac cacagtcaac ttcagaaata 5760

tctagaatag caagaaaggg gtctggttca gcttgtagat cgttgtttgg cggatacgtg 5820

gcctgggaaa tgggaaaagc tgaagatggt catgattcca tggcagtaca aatcgcagac 5880

agctctgact ggcctcagat gaaagcttgt gtcctagttg tcagcgatat taaaaaggat 5940

gtgagttcca ctcagggtat gcaattgacc gtggcaacct ccgaactatt taaagaaaga 6000

attgaacatg tcgtaccaaa gagatttgaa gtcatgcgta aagccattgt tgaaaaagat 6060

ttcgccacct ttgcaaagga aacaatgatg gattccaact ctttccatgc cacatgtttg 6120

gactctttcc ctccaatatt ctacatgaat gacacttcca agcgtatcat cagttggtgc 6180

cacaccatta atcagtttta cggagaaaca atcgttgcat acacgtttga tgcaggtcca 6240

aatgctgtgt tgtactactt agctgaaaat gagtcgaaac tctttgcatt tatctataaa 6300

ttgtttggct ctgttcctgg atgggacaag aaatttacta ctgagcagct tgaggctttc 6360

aaccatcaat ttgaatcatc taactttact gcacgtgaat tggatcttga gttgcaaaag 6420

gatgttgcca gagtgatttt aactcaagtc ggttcaggcc cacaagaaac aaacgaatct 6480

ttgattgacg caaagactgg tctaccaaag gaagaggagt tttaactcga cgccggcgga 6540

ggcacatatg tctcagaacg tttacattgt atcgactgcc agaaccccaa ttggttcatt 6600

ccagggttct ctatcctcca agacagcagt ggaattgggt gctgttgctt taaaaggcgc 6660

cttggctaag gttccagaat tggatgcatc caaggatttt gacgaaatta tttttggtaa 6720

cgttctttct gccaatttgg gccaagctcc ggccagacaa gttgctttgg ctgccggttt 6780

gagtaatcat atcgttgcaa gcacagttaa caaggtctgt gcatccgcta tgaaggcaat 6840

cattttgggt gctcaatcca tcaaatgtgg taatgctgat gttgtcgtag ctggtggttg 6900

tgaatctatg actaacgcac catactacat gccagcagcc cgtgcgggtg ccaaatttgg 6960

ccaaactgtt cttgttgatg gtgtcgaaag agatgggttg aacgatgcgt acgatggtct 7020

agccatgggt gtacacgcag aaaagtgtgc ccgtgattgg gatattacta gagaacaaca 7080

agacaatttt gccatcgaat cctaccaaaa atctcaaaaa tctcaaaagg aaggtaaatt 7140

cgacaatgaa attgtacctg ttaccattaa gggatttaga ggtaagcctg atactcaagt 7200

cacgaaggac gaggaacctg ctagattaca cgttgaaaaa ttgagatctg caaggactgt 7260

tttccaaaaa gaaaacggta ctgttactgc cgctaacgct tctccaatca acgatggtgc 7320

tgcagccgtc atcttggttt ccgaaaaagt tttgaaggaa aagaatttga agcctttggc 7380

tattatcaaa ggttggggtg aggccgctca tcaaccagct gattttacat gggctccatc 7440

tcttgcagtt ccaaaggctt tgaaacatgc tggcatcgaa gacatcaatt ctgttgatta 7500

ctttgaattc aatgaagcct tttcggttgt cggtttggtg aacactaaga ttttgaagct 7560

agacccatct aaggttaatg tatatggtgg tgctgttgct ctaggtcacc cattgggttg 7620

ttctggtgct agagtggttg ttacactgct atccatctta cagcaagaag gaggtaagat 7680

cggtgttgcc gccatttgta atggtggtgg tggtgcttcc tctattgtca ttgaaaagat 7740

atgaggatcc tctagatgcg caggaggcac atatggcgaa gaacgttggg attttggcta 7800

tggatatcta tttccctccc acctgtgttc aacaggaagc tttggaagca catgatggag 7860

caagtaaagg gaaatacact attggacttg gccaagattg tttagctttt tgcactgagc 7920

ttgaagatgt tatctctatg agtttcaatg cggtgacatc acttttgag aagtataaga 7980

ttgaccctaa ccaaatcggg cgtcttgaag taggaagtga gactgttatt gacaaaagca 8040

agtccatcaa gaccttcttg atgcagctct ttgagaaatg tggaaacact gatgtcgaag 8100

gtgttgactc gaccaatgct tgctatggtg gaactgcagc tttgttaaac tgtgtcaatt 8160

gggttgagag taactcttgg gatggacgtt atggcctcgt catttgtact gacagcgcgg 8220

tttatgcaga aggacccgca aggcccactg gaggagctgc agcgattgct atgttgatag 8280

gacctgatgc tcctatcgtt ttcgaaagca aattgagagc aagccacatg gctcatgtct 8340

atgactttta caagcccaat cttgctagcg agtacccggt tgttgatggt aagctttcac 8400

agacttgcta cctcatggct cttgactcct gctataaaca tttatgcaac aagttcgaga 8460

agatcgaggg caaagagttc tccataaatg atgctgatta cattgttttc cattctccat 8520

acaataaact tgtacagaaa agctttgctc gtctcttgta caacgacttc ttgagaaacg 8580

caagctccat tgacgaggct gccaaagaaa agttcacccc ttattcatct ttgacccttg 8640

acgagagtta ccaaagccgt gatcttgaaa aggtgtcaca acaaatttcg aaaccgtttt 8700

atgatgctaa agtgcaacca acgactttaa taccaaagga agtcggtaac atgtacactg 8760

cttctctcta cgctgcattt gcttccctca tccacaataa acacaatgat ttggcgggaa 8820

agcgggtggt tatgttctct tatggaagtg gctccaccgc aacaatgttc tcattacgcc 8880

tcaacgacaa taagcctcct ttcagcattt caaacattgc atctgtaatg gatgttggcg 8940

gtaaattgaa agctagacat gagtatgcac ctgagaagtt tgtggagaca atgaagctaa 9000

tggaacatag gtatggagca aaggactttg tgacaaccaa ggagggtatt atagatcttt 9060

tggcaccggg aacttattat ctgaaagagg ttgattcctt gtaccggaga ttctatggca 9120

agaaaggtga agatggatct gtagccaatg gacactgagg atccgtcgag cacgtggagg 9180

cacatatgca atgctgtgag atgcctgttg gatacattca gattcctgtt gggattgctg 9240

gtccattgtt gcttgatggt tatgagtact ctgttcctat ggctacaacc gaaggttgtt 9300

tggttgctag cactaacaga ggctgcaagg ctatgtttat ctctggtggc gccaccagta 9360

ccgttcttaa ggacggtatg acccgagcac ctgttgttcg gttcgcttcg gcgagacgag 9420

cttcggagct taagtttttc ttggagaatc cagagaactt tgatactttg gcagtagtct 9480

tcaacaggtc gagtagattt gcaagactgc aaagtgttaa atgcacaatc gcggggaaga 9540

atgcttatgt aaggttctgt tgtagtactg gtgatgctat ggggatgaat atggtttcta 9600

aaggtgtgca gaatgttctt gagtatctta ccgatgattt ccctgacatg gatgtgattg 9660

gaatctctgg taacttctgt tcggacaaga aacctgctgc tgtgaactgg attgagggac 9720

gtggtaaatc agttgtttgc gaggctgtaa tcagaggaga gatcgtgaac aaggtcttga 9780

aaacgagcgt ggctgcttta gtcgagctca acatgctcaa gaacctagct ggctctgctg 9840

ttgcaggctc tctaggtgga ttcaacgctc atgccagtaa catagtgtct gctgtattca 9900

tagctactgg ccaagatcca gctcaaaacg tggagagttc tcaatgcatc accatgatgg 9960

aagctattaa tgacggcaaa gatatccata tctcagtcac tatgccatct atcgaggtgg 10020

ggacagtggg aggaggaaca cagcttgcat ctcaatcagc gtgtttaaac ctgctcggag 10080

ttaaaggagc aagcacagag tcgccgggaa tgaacgcaag gaggctagcg acgatcgtag 10140

ccggagcagt tttagctgga gagttatctt taatgtcagc aattgcagct ggacagcttg 10200

tgagaagtca catgaaatac aatagatcca gccgagacat ctctggagca acgacaacga 10260

caacaacaac aacatgaccc gtaggaggca catatgagtt cccaacaaga gaaaaaggat 10320

tatgatgaag aacaattaag gttgatggaa gaagtttgta tcgttgtaga tgaaaatgat 10380

gtccctttaa gatatggaac gaaaaaggag tgtcatttga tggaaaatat aaataaaggt 10440

cttttgcata gagcattctc tatgttcatc tttgatgagc aaaatcgcct tttacttcag 10500

cagcgtgcag aagagaaaat tacatttcca tccttatgga cgaatacatg ttgctcccac 10560

ccattggatg ttgctggtga acgtggtaat actttacctg aagctgttga aggtgttaag 10620

aatgcagctc aacgcaagct gttccatgaa ttgggtattc aagccaagta tattcccaaa 10680

gacaaatttc agtttcttac acgaatccat taccttgctc ctagtactgg tgcttgggga 10740

gagcatgaaa ttgactacat tcttttcttc aaaggtaaag ttgagctgga tatcaatccc 10800

aatgaagttc aagcctataa gtatgttact atggaagagt taaaagagat gttttccgat 10860

cctcaatatg gattcacacc atggttcaaa cttatttgtg agcattttat gtttaaatgg 10920

tggcaggatg tagatcatgc gtcaaaattc caagatacct taattcatcg ttgctaagga 10980

tcccccggga tccggccgat ctaaacaaac ccggaacaga ccgttgggaa gcgattcagt 11040

aattaaagct tcatgactcc tttttggttc ttaaagtccc tttgaggtat caactaataa 11100

gaaagatatt agacaacccc ccttttttct ttttcacaaa taggaagttt cgaatccaat 11160

ttggatatta aaaggattac cagatataac acaaaatctc tccacctatt ccttctagtc 11220

gagcctctcg gtctgtcatt atacctcgag aagtagaaag aattacaatc cccattccac 11280

ctaaaattcg cggaattcgt tgataattag aatagattcg tagaccaggt cgactgattc 11340

gttttaaatt taaaatattt ctatagggtc ttttcctatt ccttctatgt cgcagggtta 11400

aaaccaaaaa atatttgttt ttttctcgat gttttctcac gttttcgata aaaccttctc 11460

gtaaaagtat ttgaacaata ttttcggtaa tattagtaga tgctattcga accacccttt 11520

ttcgatccat atcagcattt cgtatagaag ttattatctc agcaatagtg tccctaccca 11580

tgatgaacta aaattattgg ggcctccaaa tttgatataa tcaacgtgtt ttttacttat 11640

ttttttttg aatatgatat gaattattaa agatatatgc gtgagacaca atctactaat 11700

taatctattt ctttcaaata ccccactaga aacagatcac aatttcattt tataatacct 11760

cgggagctaa tgaaactatt ttagtaaaat ttaattctct caattcccgg gcgattgcac 11820

caaaaattcg agttcctttt gatttccttc cttcttgatc aataacaact gcagcattgt 11880

catcatatcg tattatcatc ccgttgtcac gtttgagttc tttacaggtc cgcacaatta 11940

cagctctgac tacttctgat ctttctaggg gcatatttgg tacggcttct ttgatcacag 12000

caacaataac gtcaccaata tgagcatatc gacgattgct agctcctatg attcgaatac 12060

acatcaattc tcgagccccg ctgttatccg ctacatttaa atgggtctga ggttgaatca 12120

ttttttttaat ccgttctttg aatgcaaagg gcgaagaaaa aaaagaaata tttttgtcca 12180

aaaaaaaaga aacatgcggt ttcgtttcat atctaagagc cctttccgca tttttttcta 12240

ttacattacg aaataatgaa ttgagttcgt ataggcattt tagatgctgc tagtgaaata 12300

gcccttctgg ctatattttc tgttactcca cccatttcat aaagtattcg acccggttta 12360

acaacagcta cccaatattc aggggatcca ctagttctag agcggccgcc accgcggtgg 12420

agctccagct tttgttccct ttagtgaggg ttaatttcga gcttggcgta atcatggtca 12480

tagctgtttc ctgtgtgaaa ttgttatccg ctcacaattc cacacaacat acgagccgga 12540

agcataaagt gtaaagcctg gggtgcctaa tgagtgagct aactcacatt aattgcgttg 12600

cgctcactgc ccgctttcca gtcgggaaac ctgtcgtgcc agctgcatta atgaatcggc 12660

caacgcgcgg ggagaggcgg tttgcgtatt gggcgctctt ccgcttcctc gctcactgac 12720

tcgctgcgct cggtcgttcg gctgcggcga gcggtatcag ctcactcaaa ggcggtaata 12780

cggttatcca cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa 12840

aaggccagga accgtaaaaa ggccgcgttg ctggcgtttt tccataggct ccgcccccct 12900

gacgagcatc acaaaaatcg acgctcaagt cagaggtggc gaaacccgac aggactataa 12960

agataccagg cgtttccccc tggaagctcc ctcgtgcgct ctcctgttcc gaccctgccg 13020

cttaccggat acctgtccgc ctttctccct tcgggaagcg tggcgctttc tcatagctca 13080

cgctgtaggt atctcagttc ggtgtaggtc gttcgctcca agctgggctg tgtgcacgaa 13140

cccccgttc agcccgaccg ctgcgcctta tccggtaact atcgtcttga gtccaacccg 13200

gtaagacacg acttatcgcc actggcagca gccactggta acaggattag cagagcgagg 13260

tatgtaggcg gtgctacaga gttcttgaag tggtggccta actacggcta cactagaagg 13320

acagtatttg gtatctgcgc tctgctgaag ccagttacct tcggaaaaag agttggtagc 13380

tcttgatccg gcaaacaaac caccgctggt agcggtggtt tttttgtttg caagcagcag 13440

attacgcgca gaaaaaaagg atctcaagaa gatcctttga tcttttctac ggggtctgac 13500

gctcagtgga acgaaaactc acgttaaggg attttggtca tgagattatc aaaaaggatc 13560

ttcacctaga tccttttaaa ttaaaaatga agttttaaat caatctaaag tatatatgag 13620

taaacttggt ctgacagtta ccaatgctta atcagtgagg cacctatctc agcgatctgt 13680

ctatttcgtt catccatagt tgcctgactc cccgtcgtgt agataactac gatacgggag 13740

ggcttaccat ctggccccag tgctgcaatg ataccgcgag acccacgctc accggctcca 13800

gatttatcag caataaacca gccagccgga agggccgagc gcagaagtgg tcctgcaact 13860

ttatccgcct ccatccagtc tattaattgt tgccgggaag ctagagtaag tagttcgcca 13920

gttaatagtt tgcgcaacgt tgttgccatt gctacaggca tcgtggtgtc acgctcgtcg 13980

tttggtatgg cttcattcag ctccggttcc caacgatcaa ggcgagttac atgatccccc 14040

atgttgtgca aaaaagcggt tagctccttc ggtcctccga tcgttgtcag aagtaagttg 14100

gccgcagtgt tatcactcat ggttatggca gcactgcata attctcttac tgtcatgcca 14160

tccgtaagat gcttttctgt gactggtgag tactcaacca agtcattctg agaatagtgt 14220

atgcggcgac cgagttgctc ttgcccggcg tcaatacggg ataataccgc gccacatagc 14280

agaactttaa aagtgctcat cattggaaaa cgttcttcgg ggcgaaaact ctcaaggatc 14340

ttaccgctgt tgagatccag ttcgatgtaa cccactcgtg cacccaactg atcttcagca 14400

tcttttactt tcaccagcgt ttctgggtga gcaaaaacag gaaggcaaaa tgccgcaaaa 14460

aagggaataa gggcgacacg gaaatgttga atactcatac tcttcctttt tcaatattat 14520

tgaagcattt atcagggtta ttgtctcatg agcggataca tatttgaatg tatttagaaa 14580

aataaacaaa taggggttcc gcgcacattt ccccgaaaag tgc 14623

<210> 75

<211> 7252

<212> DNA

<213> Artificial Sequence

<220>

<221> misc_feature

<222> ()..()

<223> Plastid transformation vector pFHO5 containing R. capsulatus DNA
e

<400> 75

gcacttttcg gggaaatgtg cgcggaaccc ctatttgttt atttttctaa atacattcaa 60

atatgtatcc gctcatgaga caataaccct gataaatgct tcaataatat tgaaaaagga 120

agagtatgag tattcaacat ttccgtgtcg cccttattcc ctttttttgcg gcattttgcc 180

ttcctgtttt tgctcaccca gaaacgctgg tgaaagtaaa agatgctgaa gatcagttgg 240

gtgcacgagt gggttacatc gaactggatc tcaacagcgg taagatcctt gagagttttc 300

gccccgaaga acgttttcca atgatgagca cttttaaagt tctgctatgt ggcgcggtat 360

tatcccgtat tgacgccggg caagagcaac tcggtcgccg catacactat tctcagaatg 420

acttggttga gtactcacca gtcacagaaa agcatcttac ggatggcatg acagtaagag 480

aattatgcag tgctgccata accatgagtg ataacactgc ggccaactta cttctgacaa 540

cgatcggagg accgaaggag ctaaccgctt ttttgcacaa catgggggat catgtaactc 600

gccttgatcg ttgggaaccg gagctgaatg aagccatacc aaacgacgag cgtgacacca 660

cgatgcctgt agcaatggca acaacgttgc gcaaactatt aactggcgaa ctacttactc 720

tagcttcccg gcaacaatta atagactgga tggaggcgga taaagttgca ggaccacttc 780

tgcgctcggc ccttccggct ggctggttta ttgctgataa atctggagcc ggtgagcgtg 840

ggtctcgcgg tatcattgca gcactggggc cagatggtaa gccctcccgt atcgtagtta 900

tctacacgac ggggagtcag gcaactatgg atgaacgaaa tagacagatc gctgagatag 960

gtgcctcact gattaagcat tggtaactgt cagaccaagt ttactcatat atactttaga 1020

ttgatttaaa acttcatttt taatttaaaa ggatctaggt gaagatcctt tttgataatc 1080

tcatgaccaa aatcccttaa cgtgagtttt cgttccactg agcgtcagac cccgtagaaa 1140

agatcaaagg atcttcttga tcccttttt ttctgcgcgt aatctgctgc ttgcaaacaa 1200

aaaaaccacc gctaccagcg gtggtttgtt tgccggatca agagctacca actcttttc 1260

cgaaggtaac tggcttcagc agagcgcaga taccaaatac tgtccttcta gtgtagccgt 1320

agttaggcca ccacttcaag aactctgtag caccgcctac atacctcgct ctgctaatcc 1380

tgttaccagt ggctgctgcc agtggcgata agtcgtgtct taccgggttg gactcaagac 1440

gatagttacc ggataaggcg cagcggtcgg gctgaacggg gggttcgtgc acacagccca 1500

gcttggagcg aacgacctac accgaactga gatacctaca gcgtgagcta tgagaaagcg 1560

ccacgcttcc cgaagggaga aaggcggaca ggtatccggt aagcggcagg gtcggaacag 1620

gagagcgcac gagggagctt ccagggggaa acgcctggta tctttatagt cctgtcgggt 1680

ttcgccacct ctgacttgag cgtcgatttt tgtgatgctc gtcaggggggg cggagcctat 1740

ggaaaaacgc cagcaacgcg gccttttttac ggttcctggc cttttgctgg ccttttgctc 1800

acatgttctt tcctgcgtta tcccctgatt ctgtggataa ccgtattacc gcctttgagt 1860

gagctgatac cgctcgccgc agccgaacga ccgagcgcag cgagtcagtg agcgaggaag 1920

cggaagagcg cccaatacgc aaaccgcctc tccccgcgcg ttggccgatt cattaatgca 1980

gctggcacga caggtttccc gactggaaag cgggcagtga gcgcaacgca attaatgtga 2040

gttagctcac tcattaggca ccccaggctt tacactttat gcttccggct cgtatgttgt 2100

gtggaattgt gagcggataa caatttcaca caggaaacag ctatgaccat gattacgcca 2160

agctcgaaat taaccctcac taaagggaac aaaagctgga gctccaccgc ggtggcggcc 2220

gctctagaac tagtggatct tcttggctgt tattcaaaag gtccaacaat gtatatatat 2280

tggacatttt gaggcaatta tagatcctgg aaggcaattc tgattggtca ataaaaatcg 2340

atttcaatgc tatttttttt ttgtttttta tgagtttagc caatttatca tgaaaggtaa 2400

aaggggataa aggaaccgtg tgttgattgt cctgtaaata taagttgtct tcctccatat 2460

gtaaaaaggg aataaataaa tcaattaaat ttcgggatgc ttcatgaagt gcttctttcg 2520

gagttaaact tccgtttgtc catatttcga gaaaaagtat ctcttgtttt tcattcccat 2580

tcccataaga atgaatacta tgattcgcgt ttcgaacagg catgaataca gcatctatag 2640

gataacttcc atcttgaaag ttatgtggcg tttttataag atatccacga tttctctcta 2700

tttgtaatcc aatacaaaaa tcaattggtt ccgttaaact ggctatatgt tgtgtattat 2760

caacgatttc tacataaggc ggcaagatga tatcttgggc agttacagat ccaggaccct 2820

tgacacaaat agatgcgtca gaagttccat atagattact tcttaatata atttctttca 2880

aattcattaa aatttcatgt accgattctt gaatgcccgt tatggtagaa tattcatgtg 2940

ggactttctc agattttaca cgtgtgatac atgttccttc tatttctcca agtaaagctc 3000

ttcgcatcgc aatgcctatt gtgtcggctt ggcctttcat aagtggagac agaataaagc 3060

gtccataata aaggcgttta ctgtctgttc ttgattcaac acacttccac tgtagtgtcc 3120

gagtagatac tgttactttc tctcgaacca tagtactatt atttgattag atcatcgaat 3180

cttttatttc tcttgagatt tcttcaatgt tcagttctac acacgtcttt ttttcggagg 3240

tctacagcca ttatgtggca taggagttac atcccgtacg aaagttaata gtataccact 3300

tcgacgaata gctcgtaatg ctgcatctct tccgagaccg ggacctttta tcatgacttc 3360

tgctcgttgc ataccttgat ccactactgt acggatagcg tttgctgctg cggtttgagc 3420

agcaaacggt gttcctcttc tcgtaccttt gaatccagaa gtaccggcgg aggaccaaga 3480

aactactcga ccccgtacat ctgtaacagt gacaatggta ttattgaaac ttgcttgaac 3540

atgaataact ccctttggta ttctacgtgc acccttacgt gaaccaatac gtccattcct 3600

acgcgaacta attttcggta tagcttttgc catattttat catctcgtaa atatgagtca 3660

gagatatatg gatatatcca tttcatgtca aaacagattc tttatttgta catcggctct 3720

tctggcaagt ctgattatcc ctgtctttgt ttatgtctcg ggttggaaca aattactata 3780

attcgtcccc gcctacggat tagtcgacat ttttcacaaa ttttacgaac ggaagctctt 3840

attttcatat ttctcattcc ttaccttaat tctgaatcta tttcttggaa gaaaataagt 3900

ttcttgaaat ttttcatctc gaattgtatt cccacgaaag gaatggtgaa gttgaaaaac 3960

gaatccttca aatctttgtt gtggagtcga taaattatac gccctttggt tgaatcataa 4020

ggacttactt caattttgac tctatctcct ggcagtatcc gtataaaact atgccggatc 4080

tttcctgaaa cataatttat aatcagatcc aggaggacca tatgatcgcc gaagcggata 4140

tggaggtctg ccgggagctg atccgcaccg gcagctactc cttccatgcg gcgtccagag 4200

ttctgccggc gcgggtccgt gaccccgcgc tggcgcttta cgccttttgc cgcgtcgccg 4260

atgacgaagt cgacgaggtt ggcgcgccgc gcgacaaggc tgcggcggtt ttgaaacttg 4320

gcgaccggct ggaggacatc tatgccggtc gtccgcgcaa tgcgccctcg gatcgggctt 4380

tcgcggcggt ggtcgaggaa ttcgagatgc cgcgcgaatt gcccgaggcg ctgctggagg 4440

gcttcgcctg ggatgccgag gggcggtggt atcacacgct ttcggacgtg caggcctatt 4500

cggcgcgggt ggcggccgcc gtcggcgcga tgatgtgcgt gctgatgcgg gtgcgcaacc 4560

ccgatgcgct ggcgcgggcc tgcgatctcg gtcttgccat gcagatgtcg aacatcgccc 4620

gcgacgtggg cgaggatgcc cgggcggggc ggcttttcct gccgaccgac tggatggtcg 4680

aggaggggat cgatccgcag gcgttcctgg ccgatccgca gcccaccaag ggcatccgcc 4740

gggtcaccga gcggttgctg aaccgcgccg accggcttta ctggcgggcg gcgacggggg 4800

tgcggctttt gcccctttgac tgccgaccgg ggatcatggc cgcgggcaag atctatgccg 4860

cgatcggggc cgaggtggcg aaggcgaaat acgacaacat cacccggcgt gcccacacga 4920

ccaagggccg caagctgtgg ctggtggcga attccgcgat gtcggcgacg gcgacctcga 4980

tgctgccgct ctcgccgcgg gtgcatgcca agcccgagcc cgaagtggcg catctggtcg 5040

atgccgccgc gcatcgcaac ctgcatcccg aacggtccga ggtgctgatc tcggcgctga 5100

tggcgctgaa ggcgcgcgac cgcggcctgg cgatggattg aggatctaaa caaacccgga 5160

acagaccgtt gggaagcgat tcagtaatta aagcttcatg actccttttt ggttcttaaa 5220

gtcccctttga ggtatcaact aataagaaag atattagaca acccccctttt tttctttttc 5280

acaaatagga agtttcgaat ccaatttgga tattaaaagg attaccagat ataacacaaa 5340

atctctccac ctattccttc tagtcgagcc tctcggtctg tcattatacc tcgagaagta 5400

gaaagaatta caatccccat tccacctaaa attcgcggaa ttcgttgata attagaatag 5460

attcgtagac caggtcgact gattcgtttt aaatttaaaa tatttctata gggtcttttc 5520

ctattccttc tatgtcgcag ggttaaaacc aaaaaatatt tgtttttttc tcgatgtttt 5580

ctcacgtttt cgataaaacc ttctcgtaaa agtatttgaa caatattttc ggtaatatta 5640

gtagatgcta ttcgaaccac ccttttttcga tccatatcag catttcgtat agaagttatt 5700

atctcagcaa tagtgtccct acccatgatg aactaaaatt attggggcct ccaaatttga 5760

tataatcaac gtgtttttta cttatttttt ttttgaatat gatatgaatt attaaagata 5820

tatgcgtgag acacaatcta ctaattaatc tatttctttc aaatacccca ctagaaacag 5880

atcacaattt cattttataa tacctcggga gctaatgaaa ctattttagt aaaatttaat 5940

tctctcaatt cccgggcgat tgcaccaaaa attcgagttc cttttgattt ccttccttct 6000

tgatcaataa caactgcagc attgtcatca tatcgtatta tcatcccgtt gtcacgtttg 6060

agttctttac aggtccgcac aattacagct ctgactactt ctgatctttc taggggcata 6120

tttggtacgg cttctttgat cacagcaaca ataacgtcac caatatgagc atatcgacga 6180

ttgctagctc ctatgattcg aatacacatc aattctcgag ccccgctgtt atccgctaca 6240

tttaaatggg tctgaggttg aatcattttt ttaatccgtt ctttgaatgc aaagggcgaa 6300

gaaaaaaaag aaatattttt gtccaaaaaa aaagaaacat gcggtttcgt ttcatatcta 6360

agagcccttt ccgcattttt ttctattaca ttacgaaata atgaattgag ttcgtatagg 6420

cattttagat gctgctagtg aaatagccct tctggctata ttttctgtta ctccacccat 6480

ttcataaagt attcgacccg gtttaacaac agctacccaa tattcagggg atcccccggg 6540

ctgcaggaat tcgatatcaa gcttatcgat accgtcgacc tcgaggggggg gcccggtacc 6600

caattcgccc tatagtgagt cgtattacaa ttcactggcc gtcgttttac aacgtcgtga 6660

ctgggaaaac cctggcgtta cccaacttaa tcgccttgca gcacatcccc ctttcgccag 6720

ctggcgtaat agcgaagagg cccgcaccga tcgcccttcc caacagttgc gcagcctgaa 6780

tggcgaatgg gacgcgccct gtagcggcgc attaagcgcg gcgggtgtgg tggttacgcg 6840

cagcgtgacc gctacacttg ccagcgccct agcgcccgct cctttcgctt tcttcccttc 6900

ctttctcgcc acgttcgccg gctttccccg tcaagctcta aatcgggggc tccctttagg 6960

gttccgattt agtgctttac ggcacctcga ccccaaaaaa cttgattagg gtgatggttc 7020

acgtagtggg ccatcgccct gatagacggt ttttcgccct ttgacgttgg agtccacgtt 7080

ctttaatagt ggactcttgt tccaaactgg aacaacactc aaccctatct cggtctattc 7140

ttttgattta taagggattt tgccgatttc ggcctattgg ttaaaaaatg agctgattta 7200

acaaaaattt aacgcgaatt ttaacaaaat attaacgctt acaatttagg tg 7252

<210> 76

<211> 14623

<212> DNA

<213> Artificial Sequence

<220>

<221> misc_feature

<222> ()..()

<223> Plastid transformation vector pFHO6, containing Operon E, contain
i

<400> 76

cacctaaatt gtaagcgtta atattttgtt aaaattcgcg ttaaattttt gttaaatcag 60

ctcatttttt aaccaatagg ccgaaatcgg caaaatccct tataaatcaa aagaatagac 120

cgagataggg ttgagtgttg ttccagtttg gaacaagagt ccactattaa agaacgtgga 180

ctccaacgtc aaagggcgaa aaaccgtcta tcagggcgat ggcccactac gtgaaccatc 240

accctaatca agtttttttgg ggtcgaggtg ccgtaaagca ctaaatcgga accctaaagg 300

gagcccccga tttagagctt gacggggaaa gccggcgaac gtggcgagaa aggaagggaa 360

gaaagcgaaa ggagcgggcg ctagggcgct ggcaagtgta gcggtcacgc tgcgcgtaac 420

caccacaccc gccgcgctta atgcgccgct acagggcgcg tcccattcgc cattcaggct 480

gcgcaactgt tgggaagggc gatcggtgcg ggcctcttcg ctattacgcc agctggcgaa 540

aggggatgt gctgcaaggc gattaagttg ggtaacgcca gggttttccc agtcacgacg 600

ttgtaaaacg acggccagtg aattgtaata cgactcacta tagggcgaat tgggtaccgg 660

gccccccctc gaggtcgacg gtatcgataa gcttgatatc gaattcctgc agcccggggg 720

atcttcttgg ctgttattca aaaggtccaa caatgtatat atattggaca ttttgaggca 780

attatagatc ctggaaggca attctgattg gtcaataaaa atcgatttca atgctatttt 840

ttttttgttt tttatgagtt tagccaattt atcatgaaag gtaaaagggg ataaaggaac 900

cgtgtgttga ttgtcctgta aatataagtt gtcttcctcc atatgtaaaa agggaataaa 960

taaatcaatt aaatttcggg atgcttcatg aagtgcttct ttcggagtta aacttccgtt 1020

tgtccatatt tcgagaaaaa gtatctcttg tttttcattc ccattcccat aagaatgaat 1080

actatgattc gcgtttcgaa caggcatgaa tacagcatct ataggataac ttccatcttg 1140

aaagttatgt ggcgttttta taagatatcc acgatttctc tctatttgta atccaataca 1200

aaaatcaatt ggttccgtta aactggctat atgttgtgta ttatcaacga tttctacata 1260

aggcggcaag atgatatctt gggcagttac agatccagga cccttgacac aaatagatgc 1320

gtcagaagtt ccatatagat tacttcttaa tataatttct ttcaaattca ttaaaatttc 1380

atgtaccgat tcttgaatgc ccgttatggt agaatattca tgtgggactt tctcagattt 1440

tacacgtgtg atacatgttc cttctatttc tccaagtaaa gctcttcgca tcgcaatgcc 1500

tattgtgtcg gcttggcctt tcataagtgg agacagaata aagcgtccat aataaaggcg 1560

tttactgtct gttcttgatt caacacactt ccactgtagt gtccgagtag atactgttac 1620

tttctctcga accatagtac tattatttga ttagatcatc gaatctttta tttctcttga 1680

gatttcttca atgttcagtt ctacacacgt ctttttttcg gaggtctaca gccattatgt 1740

ggcataggag ttacatcccg tacgaaagtt aatagtatac cacttcgacg aatagctcgt 1800

aatgctgcat ctcttccgag accgggacct tttatcatga cttctgctcg ttgcatacct 1860

tgatccacta ctgtacggat agcgtttgct gctgcggttt gagcagcaaa cggtgttcct 1920

cttctcgtac ctttgaatcc agaagtaccg gcggaggacc aagaaactac tcgaccccgt 1980

acatctgtaa cagtgacaat ggtattattg aaacttgctt gaacatgaat aactcccttt 2040

ggtattctac gtgcaccctt acgtgaacca atacgtccat tcctacgcga actaattttc 2100

ggtatagctt ttgccatatt ttatcatctc gtaaatatga gtcagagata tatggatata 2160

tccatttcat gtcaaaacag attctttatt tgtacatcgg ctcttctggc aagtctgatt 2220

atccctgtct ttgtttatgt ctcgggttgg aacaaattac tataattcgt ccccgcctac 2280

ggattagtcg acatttttca caaattttac gaacggaagc tcttattttc atatttctca 2340

ttccttacct taattctgaa tctatttctt ggaagaaaat aagtttcttg aaatttttca 2400

tctcgaattg tattcccacg aaaggaatgg tgaagttgaa aaacgaatcc ttcaaatctt 2460

tgttgtggag tcgataaatt atacgccctt tggttgaatc ataaggactt acttcaattt 2520

tgactctatc tcctggcagt atccgtataa aactatgccg gatctttcct gaaacataat 2580

ttataatcag atcggccgca ggaggagttc atatgtcaga gttgagagcc ttcagtgccc 2640

cagggaaagc gttactagct ggtggatatt tagttttaga tacaaaatat gaagcatttg 2700

tagtcggatt atcggcaaga atgcatgctg tagcccatcc ttacggttca ttgcaagggt 2760

ctgataagtt tgaagtgcgt gtgaaaagta aacaatttaa agatggggag tggctgtacc 2820

atataagtcc taaaagtggc ttcattcctg tttcgatagg cggatctaag aacccttttca 2880

ttgaaaaagt tatcgctaac gtatttagct actttaaacc taacatggac gactactgca 2940

atagaaactt gttcgttatt gatattttct ctgatgatgc ctaccattct caggaggata 3000

gcgttaccga acatcgtggc aacagaagat tgagttttca ttcgcacaga attgaagaag 3060

ttcccaaaac agggctgggc tcctcggcag gtttagtcac agttttaact acagctttgg 3120

cctccttttt tgtatcggac ctggaaaata atgtagacaa atatagagaa gttattcata 3180

atttagcaca agttgctcat tgtcaagctc agggtaaaat tggaagcggg tttgatgtag 3240

cggcggcagc atatggatct atcagatata gaagattccc acccgcatta atctctaatt 3300

tgccagatat tggaagtgct acttacggca gtaaactggc gcatttggtt gatgaagaag 3360

actggaatat tacgattaaa agtaaccatt taccttcggg attaacttta tggatgggcg 3420

atattaagaa tggttcagaa acagtaaaac tggtccagaa ggtaaaaaat tggtatgatt 3480

cgcatatgcc agaaagcttg aaaatatata cagaactcga tcatgcaaat tctagattta 3540

tggatggact atctaaacta gatcgcttac acgagactca tgacgattac agcgatcaga 3600

tatttgagtc tcttgagagg aatgactgta cctgtcaaaa gtatcctgaa atcacagaag 3660

ttagagatgc agttgccaca attagacgtt cctttagaaa aataactaaa gaatctggtg 3720

ccgatatcga acctcccgta caaactagct tattggatga ttgccagacc ttaaaaggag 3780

ttcttacttg cttaatacct ggtgctggtg gttatgacgc cattgcagtg attactaagc 3840

aagatgttga tcttagggct caaaccgcta atgacaaaag attttctaag gttcaatggc 3900

tggatgtaac tcaggctgac tggggtgtta ggaaagaaaa agatccggaa acttatcttg 3960

ataaactgca ggaggagttt taatgtcatt accgttctta acttctgcac cgggaaaggt 4020

tattattttt ggtgaacact ctgctgtgta caacaagcct gccgtcgctg ctagtgtgtc 4080

tgcgttgaga acctacctgc taataagcga gtcatctgca ccagatacta ttgaattgga 4140

cttcccggac attagcttta atcataagtg gtccatcaat gatttcaatg ccatcaccga 4200

ggatcaagta aactcccaaa aattggccaa ggctcaacaa gccaccgatg gcttgtctca 4260

ggaactcgtt agtcttttgg atccgttgtt agctcaacta tccgaatcct tccactacca 4320

tgcagcgttt tgtttcctgt atatgtttgt ttgcctatgc ccccatgcca agaatattaa 4380

gttttcttta aagtctactt tacccatcgg tgctgggttg ggctcaagcg cctctatttc 4440

tgtatcactg gccttagcta tggcctactt ggggggggtta ataggatcta atgacttgga 4500

aaagctgtca gaaaacgata agcatatagt gaatcaatgg gccttcatag gtgaaaagtg 4560

tattcacggt acccccttcag gaatagataa cgctgtggcc acttatggta atgccctgct 4620

atttgaaaaa gactcacata atggaacaat aaacacaaac aattttaagt tcttagatga 4680

tttcccagcc attccaatga tcctaaccta tactagaatt ccaaggtcta caaaagatct 4740

tgttgctcgc gttcgtgtgt tggtcaccga gaaatttcct gaagttatga agccaattct 4800

agatgccatg ggtgaatgtg ccctacaagg cttagagatc atgactaagt taagtaaatg 4860

taaaggcacc gatgacgagg ctgtagaaac taataatgaa ctgtatgaac aactattgga 4920

attgataaga ataaatcatg gactgcttgt ctcaatcggt gtttctcatc ctggattaga 4980

acttattaaa aatctgagcg atgatttgag aattggctcc acaaaactta ccggtgctgg 5040

tggcggcggt tgctctttga ctttgttacg aagagacatt actcaagagc aaattgacag 5100

cttcaaaaag aaattgcaag atgattttag ttacgagaca tttgaaacag acttgggtgg 5160

gactggctgc tgtttgttaa gcgcaaaaaa tttgaataaa gatcttaaaa tcaaatccct 5220

agtattccaa ttatttgaaa ataaaactac cacaaagcaa caaattgacg atctattatt 5280

gccaggaaac acgaatttac catggacttc agacgaggag ttttaatgac tgtatatact 5340

gctagtgtaa ctgctccggt aaatattgct actcttaagt attgggggaa aagggacacg 5400

aagttgaatc tgcccaccaa ttcgtccata tcagtgactt tatcgcaaga tgacctcaga 5460

acgttgacct ctgcggctac tgcacctgag tttgaacgcg acactttgtg gttaaatgga 5520

gaaccacaca gcatcgacaa tgaaagaact caaaattgtc tgcgcgacct acgccaatta 5580

agaaaggaaa tggaatcgaa ggacgcctca ttgcccacat tatctcaatg gaaactccac 5640

attgtctccg aaaataactt tcctacagca gctggtttag cttcctccgc tgctggcttt 5700

gctgcattgg tctctgcaat tgctaagtta taccaattac cacagtcaac ttcagaaata 5760

tctagaatag caagaaaggg gtctggttca gcttgtagat cgttgtttgg cggatacgtg 5820

gcctgggaaa tgggaaaagc tgaagatggt catgattcca tggcagtaca aatcgcagac 5880

agctctgact ggcctcagat gaaagcttgt gtcctagttg tcagcgatat taaaaaggat 5940

gtgagttcca ctcagggtat gcaattgacc gtggcaacct ccgaactatt taaagaaaga 6000

attgaacatg tcgtaccaaa gagatttgaa gtcatgcgta aagccattgt tgaaaaagat 6060

ttcgccacct ttgcaaagga aacaatgatg gattccaact ctttccatgc cacatgtttg 6120

gactctttcc ctccaatatt ctacatgaat gacacttcca agcgtatcat cagttggtgc 6180

cacaccatta atcagtttta cggagaaaca atcgttgcat acacgtttga tgcaggtcca 6240

aatgctgtgt tgtactactt agctgaaaat gagtcgaaac tctttgcatt tatctataaa 6300

ttgtttggct ctgttcctgg atgggacaag aaatttacta ctgagcagct tgaggctttc 6360

aaccatcaat ttgaatcatc taactttact gcacgtgaat tggatcttga gttgcaaaag 6420

gatgttgcca gagtgatttt aactcaagtc ggttcaggcc cacaagaaac aaacgaatct 6480

ttgattgacg caaagactgg tctaccaaag gaagaggagt tttaactcga cgccggcgga 6540

ggcacatatg tctcagaacg tttacattgt atcgactgcc agaaccccaa ttggttcatt 6600

ccagggttct ctatcctcca agacagcagt ggaattgggt gctgttgctt taaaaggcgc 6660

cttggctaag gttccagaat tggatgcatc caaggatttt gacgaaatta tttttggtaa 6720

cgttctttct gccaatttgg gccaagctcc ggccagacaa gttgctttgg ctgccggttt 6780

gagtaatcat atcgttgcaa gcacagttaa caaggtctgt gcatccgcta tgaaggcaat 6840

cattttgggt gctcaatcca tcaaatgtgg taatgctgat gttgtcgtag ctggtggttg 6900

tgaatctatg actaacgcac catactacat gccagcagcc cgtgcgggtg ccaaatttgg 6960

ccaaactgtt cttgttgatg gtgtcgaaag agatgggttg aacgatgcgt acgatggtct 7020

agccatgggt gtacacgcag aaaagtgtgc ccgtgattgg gatattacta gagaacaaca 7080

agacaatttt gccatcgaat cctaccaaaa atctcaaaaa tctcaaaagg aaggtaaatt 7140

cgacaatgaa attgtacctg ttaccattaa gggatttaga ggtaagcctg atactcaagt 7200

cacgaaggac gaggaacctg ctagattaca cgttgaaaaa ttgagatctg caaggactgt 7260

tttccaaaaa gaaaacggta ctgttactgc cgctaacgct tctccaatca acgatggtgc 7320

tgcagccgtc atcttggttt ccgaaaaagt tttgaaggaa aagaatttga agcctttggc 7380

tattatcaaa ggttggggtg aggccgctca tcaaccagct gattttacat gggctccatc 7440

tcttgcagtt ccaaaggctt tgaaacatgc tggcatcgaa gacatcaatt ctgttgatta 7500

ctttgaattc aatgaagcct tttcggttgt cggtttggtg aacactaaga ttttgaagct 7560

agacccatct aaggttaatg tatatggtgg tgctgttgct ctaggtcacc cattgggttg 7620

ttctggtgct agagtggttg ttacactgct atccatctta cagcaagaag gaggtaagat 7680

cggtgttgcc gccatttgta atggtggtgg tggtgcttcc tctattgtca ttgaaaagat 7740

atgaggatcc tctagatgcg caggaggcac atatggcgaa gaacgttggg attttggcta 7800

tggatatcta tttccctccc acctgtgttc aacaggaagc tttggaagca catgatggag 7860

caagtaaagg gaaatacact attggacttg gccaagattg tttagctttt tgcactgagc 7920

ttgaagatgt tatctctatg agtttcaatg cggtgacatc actttttgag aagtataaga 7980

ttgaccctaa ccaaatcggg cgtcttgaag taggaagtga gactgttatt gacaaaagca 8040

agtccatcaa gaccttcttg atgcagctct ttgagaaatg tggaaacact gatgtcgaag 8100

gtgttgactc gaccaatgct tgctatggtg gaactgcagc tttgttaaac tgtgtcaatt 8160

gggttgagag taactcttgg gatggacgtt atggcctcgt catttgtact gacagcgcgg 8220

tttatgcaga aggacccgca aggcccactg gaggagctgc agcgattgct atgttgatag 8280

gacctgatgc tcctatcgtt ttcgaaagca aattgagagc aagccacatg gctcatgtct 8340

atgactttta caagcccaat cttgctagcg agtacccggt tgttgatggt aagctttcac 8400

agacttgcta cctcatggct cttgactcct gctataaaca tttatgcaac aagttcgaga 8460

agatcgaggg caaagagttc tccataaatg atgctgatta cattgttttc cattctccat 8520

acaataaact tgtacagaaa agctttgctc gtctcttgta caacgacttc ttgagaaacg 8580

caagctccat tgacgaggct gccaaagaaa agttcacccc ttattcatct ttgacccttg 8640

acgagagtta ccaaagccgt gatcttgaaa aggtgtcaca acaaatttcg aaaccgtttt 8700

atgatgctaa agtgcaacca acgactttaa taccaaagga agtcggtaac atgtacactg 8760

cttctctcta cgctgcattt gcttccctca tccacaataa acacaatgat ttggcgggaa 8820

agcgggtggt tatgttctct tatggaagtg gctccaccgc aacaatgttc tcattacgcc 8880

tcaacgacaa taagcctcct ttcagcattt caaacattgc atctgtaatg gatgttggcg 8940

gtaaattgaa agctagacat gagtatgcac ctgagaagtt tgtggagaca atgaagctaa 9000

tggaacatag gtatggagca aaggactttg tgacaaccaa ggagggtatt atagatcttt 9060

tggcaccggg aacttattat ctgaaagagg ttgattcctt gtaccggaga ttctatggca 9120

agaaaggtga agatggatct gtagccaatg gacactgagg atccgtcgag cacgtggagg 9180

cacatatgca atgctgtgag atgcctgttg gatacattca gattcctgtt gggattgctg 9240

gtccattgtt gcttgatggt tatgagtact ctgttcctat ggctacaacc gaaggttgtt 9300

tggttgctag cactaacaga ggctgcaagg ctatgtttat ctctggtggc gccaccagta 9360

ccgttcttaa ggacggtatg acccgagcac ctgttgttcg gttcgcttcg gcgagacgag 9420

cttcggagct taagtttttc ttggagaatc cagagaactt tgatactttg gcagtagtct 9480

tcaacaggtc gagtagattt gcaagactgc aaagtgttaa atgcacaatc gcggggaaga 9540

atgcttatgt aaggttctgt tgtagtactg gtgatgctat ggggatgaat atggtttcta 9600

aaggtgtgca gaatgttctt gagtatctta ccgatgattt ccctgacatg gatgtgattg 9660

gaatctctgg taacttctgt tcggacaaga aacctgctgc tgtgaactgg attgagggac 9720

gtggtaaatc agttgtttgc gaggctgtaa tcagaggaga gatcgtgaac aaggtcttga 9780

aaacgagcgt ggctgcttta gtcgagctca acatgctcaa gaacctagct ggctctgctg 9840

ttgcaggctc tctaggtgga ttcaacgctc atgccagtaa catagtgtct gctgtattca 9900

tagctactgg ccaagatcca gctcaaaacg tggagagttc tcaatgcatc accatgatgg 9960

aagctattaa tgacggcaaa gatatccata tctcagtcac tatgccatct atcgaggtgg 10020

ggacagtggg aggaggaaca cagcttgcat ctcaatcagc gtgtttaaac ctgctcggag 10080

ttaaaggagc aagcacagag tcgccgggaa tgaacgcaag gaggctagcg acgatcgtag 10140

ccggagcagt tttagctgga gagttatctt taatgtcagc aattgcagct ggacagcttg 10200

tgagaagtca catgaaatac aatagatcca gccgagacat ctctggagca acgacaacga 10260

caacaacaac aacatgaccc gtaggaggca catatgagtt cccaacaaga gaaaaaggat 10320

tatgatgaag aacaattaag gttgatggaa gaagtttgta tcgttgtaga tgaaaatgat 10380

gtccctttaa gatatggaac gaaaaaggag tgtcatttga tggaaaatat aaataaaggt 10440

cttttgcata gagcattctc tatgttcatc tttgatgagc aaaatcgcct tttacttcag 10500

cagcgtgcag aagagaaaat tacatttcca tccttatgga cgaatacatg ttgctcccac 10560

ccattggatg ttgctggtga acgtggtaat actttacctg aagctgttga aggtgttaag 10620

aatgcagctc aacgcaagct gttccatgaa ttgggtattc aagccaagta tattcccaaa 10680

gacaaatttc agtttcttac acgaatccat taccttgctc ctagtactgg tgcttgggga 10740

gagcatgaaa ttgactacat tcttttcttc aaaggtaaag ttgagctgga tatcaatccc 10800

aatgaagttc aagcctataa gtatgttact atggaagagt taaaagagat gttttccgat 10860

cctcaatatg gattcacacc atggttcaaa cttatttgtg agcattttat gtttaaatgg 10920

tggcaggatg tagatcatgc gtcaaaattc caagatacct taattcatcg ttgctaagga 10980

tcccccggga tccggccgat ctaaacaaac ccggaacaga ccgttgggaa gcgattcagt 11040

aattaaagct tcatgactcc tttttggttc ttaaagtccc tttgaggtat caactaataa 11100

gaaagatatt agacaacccc cctttttctt ttttcacaaa taggaagttt cgaatccaat 11160

ttggatatta aaaggattac cagatataac acaaaatctc tccacctatt ccttctagtc 11220

gagcctctcg gtctgtcatt atacctcgag aagtagaaag aattacaatc cccattccac 11280

ctaaaattcg cggaattcgt tgataattag aatagattcg tagaccaggt cgactgattc 11340

gttttaaatt taaaatattt ctatagggtc ttttcctatt ccttctatgt cgcagggtta 11400

aaaccaaaaa atatttgttt ttttctcgat gttttctcac gttttcgata aaaccttctc 11460

gtaaaagtat ttgaacaata ttttcggtaa tattagtaga tgctattcga accacccttt 11520

ttcgatccat atcagcattt cgtatagaag ttattatctc agcaatagtg tccctaccca 11580

tgatgaacta aaattattgg ggcctccaaa tttgatataa tcaacgtgtt ttttacttat 11640

tttttttttg aatatgatat gaattattaa agatatatgc gtgagacaca atctactaat 11700

taatctattt ctttcaaata ccccactaga aacagatcac aatttcattt tataatacct 11760

cgggagctaa tgaaactatt ttagtaaaat ttaattctct caattcccgg gcgattgcac 11820

caaaaattcg agttcctttt gatttccttc cttcttgatc aataacaact gcagcattgt 11880

catcatatcg tattatcatc ccgttgtcac gtttgagttc tttacaggtc cgcacaatta 11940

cagctctgac tacttctgat ctttctaggg gcatatttgg tacggcttct ttgatcacag 12000

caacaataac gtcaccaata tgagcatatc gacgattgct agctcctatg attcgaatac 12060

acatcaattc tcgagccccg ctgttatccg ctacatttaa atgggtctga ggttgaatca 12120

ttttttttaat ccgttctttg aatgcaaagg gcgaagaaaa aaaagaaata tttttgtcca 12180

aaaaaaaaga aacatgcggt ttcgtttcat atctaagagc cctttccgca ttttttttcta 12240

ttacattacg aaataatgaa ttgagttcgt ataggcattt tagatgctgc tagtgaaata 12300

gcccttctgg ctatattttc tgttactcca cccatttcat aaagtattcg acccggttta 12360

acaacagcta cccaatattc aggggatcca ctagttctag agcggccgcc accgcggtgg 12420

agctccagct tttgttccct ttagtgaggg ttaatttcga gcttggcgta atcatggtca 12480

tagctgtttc ctgtgtgaaa ttgttatccg ctcacaattc cacacaacat acgagccgga 12540

agcataaagt gtaaagcctg gggtgcctaa tgagtgagct aactcacatt aattgcgttg 12600

cgctcactgc ccgctttcca gtcgggaaac ctgtcgtgcc agctgcatta atgaatcggc 12660

caacgcgcgg ggagaggcgg tttgcgtatt gggcgctctt ccgcttcctc gctcactgac 12720

tcgctgcgct cggtcgttcg gctgcggcga gcggtatcag ctcactcaaa ggcggtaata 12780

cggttatcca cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa 12840

aaggccagga accgtaaaaa ggccgcgttg ctggcgtttt tccataggct ccgcccccct 12900

gacgagcatc acaaaaatcg acgctcaagt cagaggtggc gaaacccgac aggactataa 12960

agataccagg cgtttccccc tggaagctcc ctcgtgcgct ctcctgttcc gaccctgccg 13020

cttaccggat acctgtccgc ctttctccct tcgggaagcg tggcgctttc tcatagctca 13080

cgctgtaggt atctcagttc ggtgtaggtc gttcgctcca agctgggctg tgtgcacgaa 13140

ccccccgttc agcccgaccg ctgcgcctta tccggtaact atcgtcttga gtccaacccg 13200

gtaagacacg acttatcgcc actggcagca gccactggta acaggattag cagagcgagg 13260

tatgtaggcg gtgctacaga gttcttgaag tggtggccta actacggcta cactagaagg 13320

acagtatttg gtatctgcgc tctgctgaag ccagttacct tcggaaaaag agttggtagc 13380

tcttgatccg gcaaacaaac caccgctggt agcggtggtt tttttgtttg caagcagcag 13440

attacgcgca gaaaaaaagg atctcaagaa gatcctttga tcttttctac ggggtctgac 13500

gctcagtgga acgaaaactc acgttaaggg attttggtca tgagattatc aaaaaggatc 13560

ttcacctaga tccttttaaa ttaaaaatga agttttaaat caatctaaag tatatatgag 13620

taaacttggt ctgacagtta ccaatgctta atcagtgagg cacctatctc agcgatctgt 13680

ctatttcgtt catccatagt tgcctgactc cccgtcgtgt agataactac gatacgggag 13740

ggcttaccat ctggccccag tgctgcaatg ataccgcgag acccacgctc accggctcca 13800

gatttatcag caataaacca gccagccgga agggccgagc gcagaagtgg tcctgcaact 13860

ttatccgcct ccatccagtc tattaattgt tgccgggaag ctagagtaag tagttcgcca 13920

gttaatagtt tgcgcaacgt tgttgccatt gctacaggca tcgtggtgtc acgctcgtcg 13980

tttggtatgg cttcattcag ctccggttcc caacgatcaa ggcgagttac atgatccccc 14040

atgttgtgca aaaaagcggt tagctccttc ggtcctccga tcgttgtcag aagtaagttg 14100

gccgcagtgt tatcactcat ggttatggca gcactgcata attctcttac tgtcatgcca 14160

tccgtaagat gcttttctgt gactggtgag tactcaacca agtcattctg agaatagtgt 14220

atgcggcgac cgagttgctc ttgcccggcg tcaatacggg ataataccgc gccacatagc 14280

agaactttaa aagtgctcat cattggaaaa cgttcttcgg ggcgaaaact ctcaaggatc 14340

ttaccgctgt tgagatccag ttcgatgtaa cccactcgtg cacccaactg atcttcagca 14400

tcttttactt tcaccagcgt ttctgggtga gcaaaaacag gaaggcaaaa tgccgcaaaa 14460

aagggaataa gggcgacacg gaaatgttga atactcatac tcttcctttt tcaatattat 14520

tgaagcattt atcagggtta ttgtctcatg agcggataca tatttgaatg tatttagaaa 14580

aataaacaaa taggggttcc gcgcacattt ccccgaaaag tgc 14623